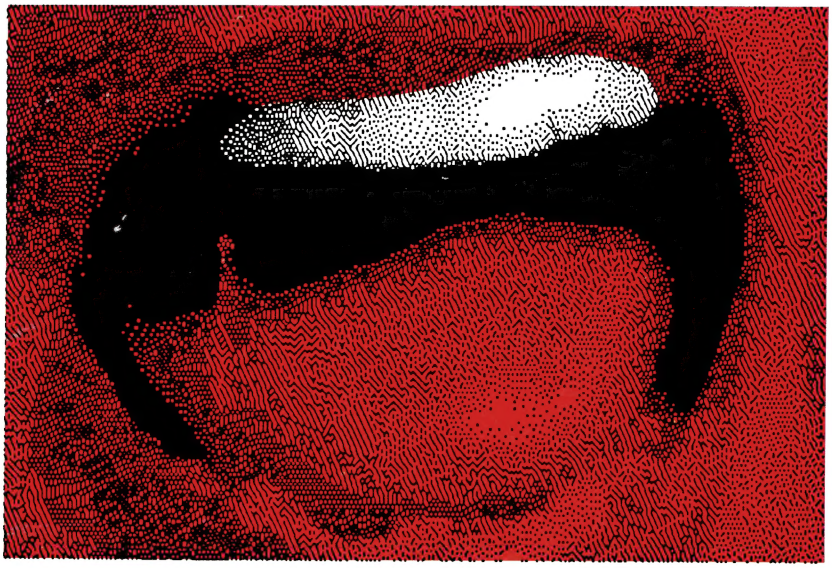
The Independent Magazine

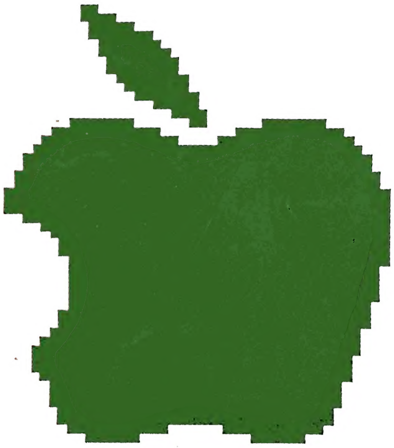
August/September Vol 2 No 6 $3*

The Australian Apple Review

Manipulating images with a computer

New machines, new directions at Apple - the full story





Two views of *Thinktank*

Help for Programmers

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Editorial

This issue of the *Australian Apple Review* comes to you for the very first time from our very own LaserWriter. To acquire it we had to pay cash and threaten violence - and even then we were only just successful.

Nothing in recent years has done so much to lift the image of Apple, both in Australia and the rest of the world, as the success of the LaserWriter.

True, other laser driven print machines exist. But the Hewlett-Packard and the Siemens are essentially replacements for the daisy wheel printer. The LaserWriter, on the other hand, is effectively a print shop, a daisy wheel printer and a dot matrix printer - all at the same time.

We have not, as yet, fully explored the wonders of this marvellous machine but we can already give you the good oil on whether we think it was worth the money. An unequivocal yes.

At the amount of money it will save us - bear in mind the *Australian Apple Review* is not the only magazine we publish - we should recover our capital expenditure in between five and six months. Which makes it a marvellous investment for the money.

Just when we were beginning to feel depressed at all of the strange news coming out of the United States and Apple, along comes our very own LaserWriter and, lo, we are transported.

If you have forgotten how great a technical company Apple is, you only need to look at the motherboard of the LaserWriter to be reminded. It is a miracle of condensed and elegant design. Much like the Macintosh itself.

We are, as you may have gathered, contented.

This issue contains, apart from the usual goodies, a long, cool look at Apple in Cupertino covering what has happened and what probably will happen. The most exciting news for Apple II afficionados is the machine has once again risen, Phoenix like, from a premature grave and is about to be updated in a major way. Exactly what the changes will be we do not know as we go to press although we do know all will be made clear on September 17 when the official press announcement is made. Our guess is the 6502 will be replaced by the new 16 bit version of the chip to make the machine faster and, in a limited sense, more up-to-date.

And we are certain the disk drives will be switched to 3.5" Sony with 800k of memory on each disk.

Until you have used 800k disks you have no idea how much data they contain and how useful they are. Does this mean that Apple II users are going to be involved in great expense to update their machines? We don't think so. The standard disk drive will still work perfectly well. It is just we will have more options to choose from. This should give the Apple II a new lease of life and is most encouraging for all of us who are Apple fanatics.

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Bits and Bytes

Tenth birthday celebrations

What does the US software company Microsoft have in common with the Science Show heard around Australia on ABC radio? Well, for one thing, both are celebrating their 10th birthday this year.

For Microsoft it's been a busy 10 years. Started by Bill Gates and Paul Allen in 1975, the company has grown from twoemployees to five in 1975 to 900 today. And, the Australia subsidiary has the highest growth rate (300%) with about twenty employees.

The product line has expanded too. In 1977 there were two products - BASIC and FORTRAN. Today, the Australian catalog has over 40 items locally available for Macs, Apple DOS and CP/M, and IBMs.

The Science Show has also seen growth during its ten years and has parented several spin-offs. The best known of these for computer oriented folk are The Technology Report (Wednesdays on 2FC at 6.30pm) and Warmboot which will be returning to Saturday morning radio in mid-October.

For those who have not tuned to Warmboot, the program provides deep meaningful interviews intermingled with light looks at all facets of computing (a la JJJ in Sydney). The Science Show on the other hand has dealt with science, from sex to John Cleese and beyond. In fact the producer of the show, Robin Williams, won the Michael Daley award for scientific journalism in 1985.

New faces at Apple Australia

In keeping with a vigorous growth rate, Apple Australia has appointed five persons to senior positions. Michael Carpena, previously with Volvo as a manager in retail/merchandising, becomes Apple Australia's merchandising manager - Apples could be the Volvos of the computer world.

Of more predictable backgrounds are Peter Jackson, ex-Wang, who will be responsible for government accounts, Bill Rees, ex-Hewlett-Packard, who will be national credit manager, Claudia Ivanoff, an ex-academic, who will be market development manager and David Dobbin, a well known face at Apple, who will now be third party product manager.

Software Developments

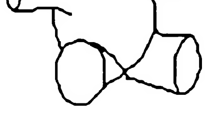
According to a recent Overseas Market Report prepared by the Australian Senior Trade Commissioner in Seoul, a considerable market exists for Australian software in Korea.

It has even been reported that the Korean Government is interested in joint ventures to "introduce higher technology into the country's industrial capability".

Those interested should contact the Department of Trade for more information. Offices are in all capital cities and Geelong, Wollongong, Newcastle and Townsville.

Give-away Koalas

Another item from the Department of Trade proves that as long as it's free, you can give away thousands. Thousands in this case were 15,000 koala stick-pins and the proud recipients were almost 10,000 visitors to the National Computer Show in Chicago (US).



For the Australians, the give-aways promise to do some good. From the 10,000 visitors came almost 500 trade inquires with projected sales of $A1 million. Perhaps we should have sold the stick-pins at $US7 each.

More "Sotware"

Quite a few people have approached me about page 8 of the July *Australian Apple Review.* The item is a reproduction of the top part of a Human Edge press release. For those who looked but could not see, Human Edge mis-spelt "software" and came up with "sotware".

Having probed Bob Hawke in that issue, news to hand is that Human Edge "introduces first artificial intelligence program to manage children." Does this mean the Apple will babysit? Or better yet, will the Apple tell your children all the things you wanted to tell them but were afraid they'd leave home if you did?

Not quite. *Mind Over Minors* is a program which, according to the release, will help us to understand our children. The document continues by telling us that the program and accompanying book offer "practical techniques for managing home and school related problems that involve other people such as teachers, friends and relatives."

"The two toughest problems for parents are are discipline and communication. How can you solve a problem if you don't understand your child and your child doesn't understand you?" I'd luv to get a copy for me mum, only it could be too late.

Note from the publisher...

I am not so sure the current smug academic habit of putting down these programs at a moment's notice is valid. If there is any validity in psychology - and I am willing to hear a good argument on the subject - I cannot, for the life of me, see

PROLIB in operation at North Sydney Demonstration

why the teaching of its basics should not be as well executed by a computer as face to face or through a book.

Do I think this program would be of any use? Truthfully, I haven't the faintest idea. But I doubt the cause is helped by a sneering approach. Perhaps a fairly serious review would be relevant.

Booking an Apple

Brought to the attention of the Australian Apple Review recently are two other Australian programs. These are not the run-of-the-mill personal application software but rather bar-code oriented library programs.

The simpler and less expensive of the two is PROLIB, written by two programmers who form Protext Software Services.

PROLIB is an efficient program which allows a school library to automate borrowing and returning while at the same time allowing teachers to see what the classes are reading. The system is inoperation at North Sydney Demonstration School and the photo shows Trevor Harrison, director of Division of Services with the NSW Department of Education, giving some work to monitors, Travis Dunn and Nichollis Adkins. Wendy Fleming, the school librarian, looks on.

The software will run on the Apple II series with one disk drive and there is sufficient space on a disk for 1,200 borrowers and 18,000 books.

The story of this software package at North Sydney Demonstration School does not end here. Behind the system being implemented were countless hours put in by parents and teachers to enter all the books and stick in the bar-codes. The school has more than 7,000 books, about 580 pupils and 22 classes. The work, I am told, took months.

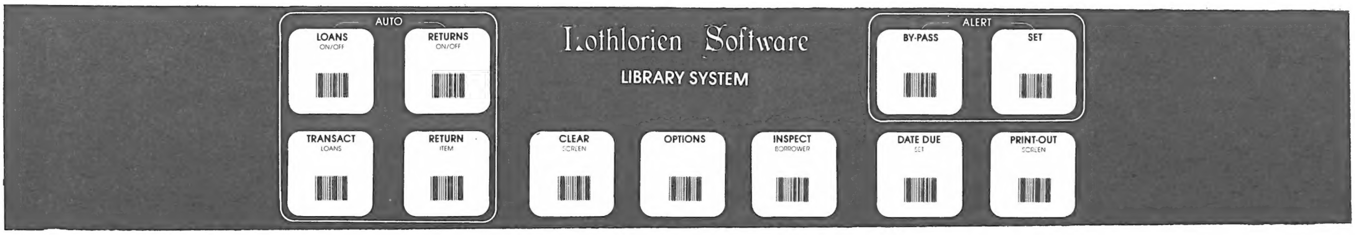
The second library package is one produced by Lothlorien Software and is the brain-child of Prof Hans Coster who consulted with librarians at the Sydney College of the Arts. The final product became a hard disk based, networked solution for larger libraries.

The major advantage of the Lothlorien software is that it allows borrowers to search the shelves electronically. This can be done by key-words as well as the usual author, title and Dewey number, which is the number librarians use to classify books by subject. Also, it willbe able to access information provided on disk by the Australian Schools Cataloging and Information Service (ASCIS), with modem links not too far away. So, it is a professional system.

The major disadvantage is unfortunately the cost in hardware and time. Usually time is neglected, but consider that a 10 Meg hard disk will handle about 2,000 borrowers and about 25,000 catalog items and you certainly know you have your work cut out for you - quite a few more months if parents are to key data in.

The photo shows Kathy Buchen, librarian at the Scotts College in Sydney, using a circulation terminal to check out a book for a student.

Kathy Buchen using Lothlorien at Scotts College



Orienting towards the children

Evanston Educators, Inc of 915 Elmwood Avenue, Evanston, IL, 60202, (the address is given as you may like to send then $US1 for a copy of "The Family Software Catalog"), have produced a Top Ten for early childhood educational programs. Top of the list is "Comparison Kitchen" which will be reviewed in the next issue of Australian Apple Review.

Unfortunately, Evanston have not heard of the many Australian programs currently available for that market. Perhaps there is an opportunity for someone there.

Sackcloth and ashes

Our faces are more than somewhat red. In the last issue we referred to the fact that something like half a dozen Apple Laserwriter printers were for sale in Australia. What we had meant to imply was the first shipment had come in and been sold as it landed and there were less than six left. Sadly, due to the dropping of three essential words during proof-reading it could have been understood to suggest Apple had only brought six LaserWriters into the country. Which is some considerable way from the truth.

All of which has created a fair amount of sturm und drang at our end and the publisher is, visibly, not amused. Mea culpa, mea maxima culpa.

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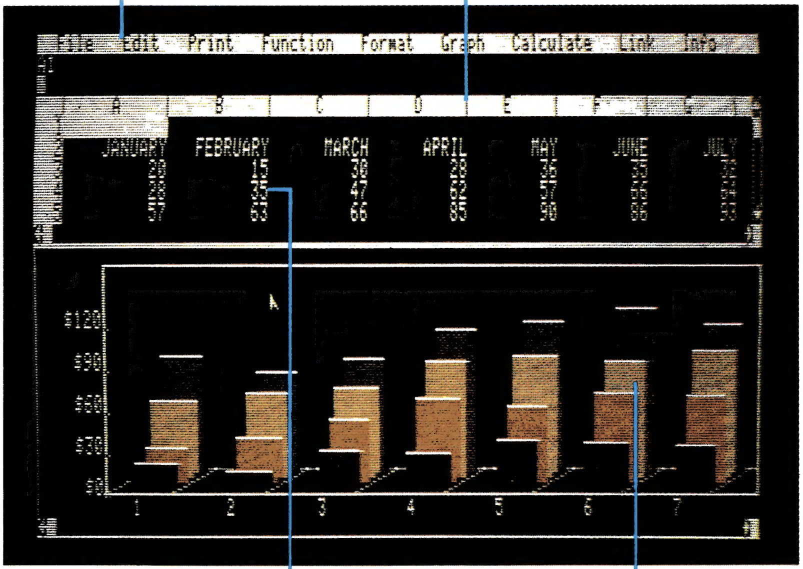

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What is happening at Apple?

At last, the full story emerges

There is an amazing ability on the part of the press and the public to forget Apple grew to its present size faster than any company in the world. And the Macintosh sold more in its first year than IBM did in a comparable period. Now there has been a slight hiccup at board level and the doomsayers are at it again. Gareth Powell writes about what is really happening.

When the band starts to play "Abide with Me" and the ship takes on a significant list - then start worrying about the lifeboats. Not before.

What has happened at Apple and what is happening at Apple is of interest to all of us.

But should it concern us unduly?

I think not. This is not a time to start worrying about the lifeboats. True, some of the passengers seem likely to get a little seasick and even a few of the crew are looking a little green about the gills - but there is no evidence of a major disaster on the near, the middle distant or even the far horizon.

"There is no evidence of a major disaster on the near, the middle distant or even the far horizon."

In order to ensure readers of the *Australian Apple Review* do not believe some of the wilder rumours on the further shores of truth, here is our version of what is happening, what has happened and what will happen at Apple. And our sources and resources are much better in this area than those of most other journalists simply because we are Apple specialists.

Steve Jobs - he left

First, the overall scene.

Despite the stories published in the press by innumerable doomsayers, the whole computer world is not just about to go down the gurgler.

What we are seeing is a recession in actual as to forecast sales, not an overall recession in sales of computers themselves.

This is a vitally important point and one even members of the computer trade consistently fail to get straight in their noggins.

Overall the trend is up.

It is simply not as stratospheric a climb as was experienced in previous years. But it was obvious such a growth rate could not be maintained - not by any industry.

"What we now have is a shake-up, a sorting out and a settling down in an industry that hardly existed before 1977."

When the bubble slackened its rate of inflation - it did not burst - there were numbers of bit players and hangers-on who got hurt because the forecasts were wrong. Forecasts very often are.

What we now have is a shake-up, a sorting out and a settling down in an industry that hardly existed before 1977.

> **"There were numbers of bit players and hangers-on who got hurt because the forecasts were wrong. Forecasts very often are."**

It is scarcely surprising it is suffering from the odd growing pain.

This settling back hurt Apple as much as anyone else. It would have been unnatural if it had not done so.

To understand what the scenario at Apple is about you have to look at the major members of the cast.

The three stars are John Sculley, 49 and an ex-Pepsi Cola executive; Steven Jobs, one of the two joint founders, and Steven Wozniak, the other founder.

With second billing, as they say in Hollywood, we find Mike Markkula, one of the first senior executives and one of the largest individual shareholders of the company, Jean-Louis Gassee, the highly articulate Frenchman who made France one of Apple's largest overseas markets, William V. Campbell, ex-Kodak and a Sculley appointee and Delbert W. Yocam, another early member of the Apple team.

Beneath them come sundry hangers-on, bit part players and supernumeries.

The early history of Apple is too well known to bear repeating. The making of the first Apple in the garage, the brilliance of Woz in designing the disk drive, the unbelievable growth into a multi-million dollar company - the fastest growth in the history of the world - all have been recounted many times before.

John Sculley - in charge

It is sad, but true, the visionary qualities needed to start a company like Apple are not always the same needed to continue with its management when it moves into the megadollar division.

What had been a company of individuals had to be melded into a corporate team while still retaining its fire and brilliance.

This was acknowledged by everyone involved as an impossible task without someone getting hurt.

The first to bail out was Wozniak in February of this year.

The story was he thought not enough attention was being paid to his beloved II - a valid complaint - but, in truth, his leaving came as no surprise to anyone, because there are few men less suited to the corporate lifestyle.

In England he would be honoured and loved, even in the business environment, as a genius eccentric.

In the United States he could never be regarded as a company man - a term he would look on as an insult - and although he initially left to return again in a different role (as an engineer in the group now led by Yocam) it was inevitable he would eventually leave permanently for fresh woods and pastures new.

> **"In England he would be honoured and loved, even in the business environment, as a genius eccentric."**

Steven Jobs was another matter altogether.

Although he viewed most of corporate America with thinly veiled contempt, at the very least he was able to project the image of the company man, the team player - something he most certainly was not.

As well as having the Corporate America image Jobs also realised Apple needed extra professional management if it was to grow and flourish. In 1983 Steven Jobs was instrumental in bringing into Apple John Sculley, Mr. Corporate America incarnate.

> **"He was able to project the image of the company man, the team player - something he most certainly was not."**

As Chief Executive Officer - what we would call managing director - Sculley faced two problems - two major problems.

First of all the company was split right down the centre into two camps. There were those, originally led by Woz, and later by Delbert W. Yocam, who felt that as the Apple II was contributing by far the largest share of profitability to the company, it should be regarded with respect and be allocated an appropriate amount of development funds.

To get this into perspective there were 800,000 IIs sold in 1984 for revenues of close to US$1 billion while the Macintosh only pulled in half of this amount of money.

The other side was the Macintosh camp which represented the desire of Jobs to produce "insanely great" computers. Despite the fact the Mac did not reach its targeted figures in its first full year of sales it still sold more than the IBM PC did in its first year. A fact frequently forgotten.

Jobs believed, with all of the intensity of that old time religion, the Macintosh was the only way to go and the Apple II was old technology and not worthy of further development.

"This was Sculley's first problem - to unite a house divided against itself."

This was Sculley's first problem - to unite a house divided against itself.

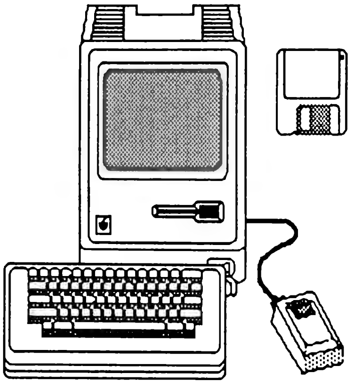
The second problem was an extension of the first.

Jobs was the manager of the Macintosh division and was also the Chairman of the company and also its single largest individual shareholder. So, at one and the same time, he was Sculley's boss and also reported to Sculley as a manager. Not an ideal state of affairs and one which could only have one forseeable result. Either Jobs or Sculley would have to go.

Once Jobs had brought Sculley into the company it was inevitable almost all of the directors of the company would support Sculley in his role as Chief Executive Officer. Those are the rules of the corporate game.

When the market started to show some slippage and the Macintosh did not meet its optimistic targets, the board suggested to Sculley this was a good time to exert his authority. These suggestions started late last year but Sculley did not move until May of this year - exactly two years after he had joined Apple from PepsiCola.

"I decided to change my life and come to Apple because of my admiration for Steve and what he had done. "



The cause of the row

Even then he moved slowly and with regret. As he said after Jobs had gone, "I decided to change my life and come to Apple because of my admiration for Steve and what he had done. Our reorganisation was all the more painful because we are such close friends."

The story which has been widely spread, and seems to be based on fact, is Jobs was getting jealous of the Apple II still raking in the money, despite the advent of the Macintosh, which in his opinion was the only way to travel. It is reported he once spoke of Apple II marketing staff as working in the "dull and boring product division." Because Jobs was Chairman and biggest single shareholder with 11.3% of the shares, his view held disproportionate sway.

"The last quarter of last year - which contains the vital Christmas period - was a record."

Although the last quarter of last year - which contains the vital Christmas period - was a record, the first quarter of this year was something less than cheery.

In the last quarter of 1984 Apple earned US$46 million on a turnover of US$698 million. In the first quarter of this year this had dropped to US$10 million on a turnover of US$435 million.

A substantial part of the shortfall could be placed very firmly in the Macintosh division of the company. It just was not selling as predicted and had not made a serious dent in sales to corporate America. Which made the challenge the Macintosh would carve into IBM sales look patently ridiculous.

"Partially, this was an image problem. Partially, it was a problem of late deliveries of essential peripherals like hard disk drives."

Partially, this was an image problem. Partially, it was a problem of late deliveries of essential peripherals like hard disk drives.

At which stage the relationship between Sculley and Jobs started to deteriorate as Sculley started pressing for on-time deliveries. By April the gap between the two was opened. At the board meeting that month the directors urged Sculley to exercise his authority and bring in someone else to head the Macintosh division.

No-one who was present at the meeting is giving interviews but all indications are it was fairly unpleasant for all concerned.

Although the board agreed Jobs would lose control of the Macintosh division, they had not decided on the exact date. Jobs seemed to interpret the board's resolution as saying something would be done if he didn't change his approach to business. Sculley interpreted it, correctly in the view of most board members, as being a firm and final resolution of the problem.

Sculley steamed ahead to replace Jobs

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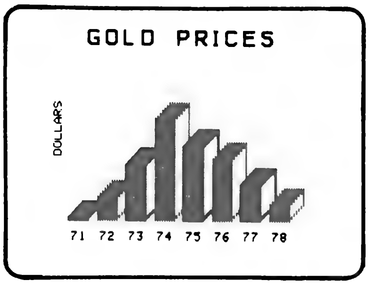

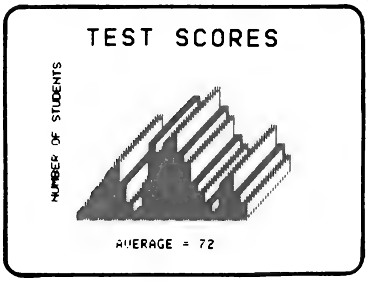

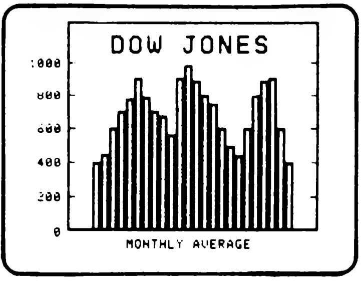

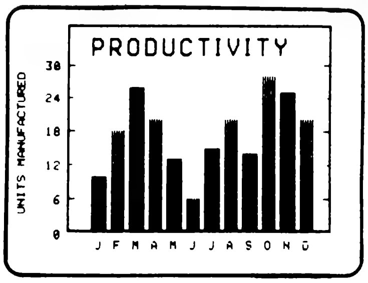

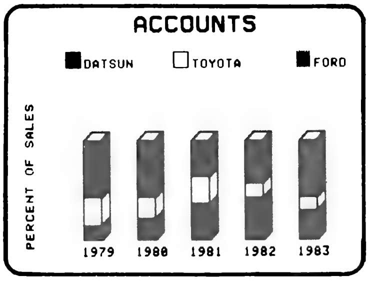

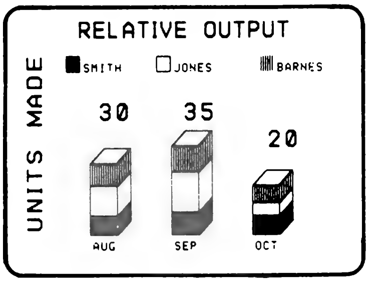

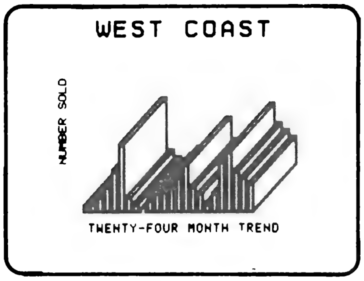

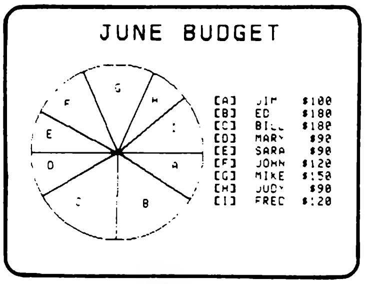

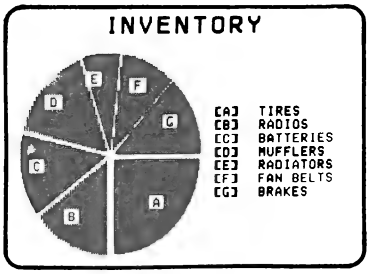

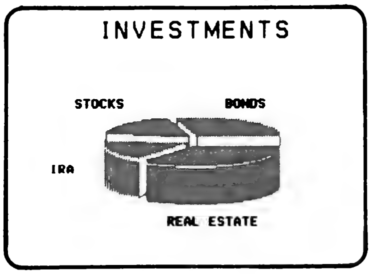

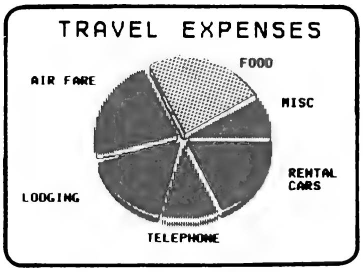

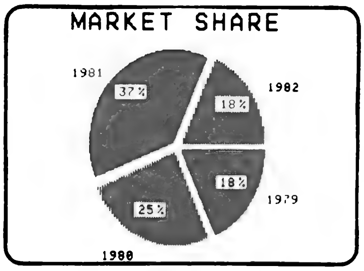

Don't pay more for less! The pictures shown above are examples of charts created with MasterChart!, perhaps the most powerful and friendly Apple II chart program on the market. Within seconds, keyboard-entered data can be converted into picture-perfect pie or bar charts, in 26 user-selectable styles, automatically scaled and labelled, and in color or black and white. And if you want to customize your charts by adding extra artwork or text, or display them in a slide show, MasterChart! comes with these valuable extras....

A slide projector, for orchestrating automated, stand-alone screen presentations of a series of charts, timed and sequenced by the user. This program alone is worth the cost of the disk. It can be used with any graphics files created with any program.

A graphics editor, for alteration and embellishment of charts. Besides standard point-by-point sketching, built-in structures permit pushbutton creation of circles, rectangles, lines, shape-table shapes, and exotic woven plaid patterns. If you wish to add clarifying text to the charts, you may type on the screen in several different letter font styles. For the artist, the graphics editor can also be used to sketch any imaginable scene from scratch.

A shape table editor, for creating special shapes for your charts. These shapes can also be used for animation in your programs! A sample animation program shows how to do it.

"I noticed the advertisements for Spectral Graphics' MasterChart! program and figured that, with a money-back guarantee, I would try it. Boy, am I glad I did! This is a fantastic program. You can master its many varied capabilities in less time that it would take to describe them. I would recommend it to everyone, even if you have absolutely no need for a graphing program. It's just fun to play with"
S.A. Smith, letter to SOFTALK, June, 1984, page 14.

"This software does much more than the advertisement suggests. Without question, this is among the best buys in software that I have ever come across, and certainly among the best written. It is extraordinarily easy to use, very well thought out, and priced to kill your competition (which I wish you every success in doing).
Anthony J Scriffignano

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If not completely satisfied, MasterChart comes with a (30) day unconditional money back guarantee.

with Jean-Louis Gassee - the head of Apple in France who had made it the fastest growing and most profitable divisions internationally. The idea was Gassee would come in as marketing director of the Macintosh division and would then be promoted to general manager to replace Jobs. Gassee insisted on a written agreement specifying the date of the promotion.

Jobs was clearly unhappy at this development and started making noises about going up against Sculley. It was a no-win situation from the start.

Despite Jobs' conviction he could sway individual members of the board to his side it has to be remembered the board had already decided Jobs was to relinquish the Macintosh division.

Sculley, on hearing Jobs was working his way around to gain support, called a meeting of the executive committee of the board for May 24 where, in a tough confrontation, Jobs finally volunteered to take a holiday while the reorganisation was pushed through. It has been reported Jobs continued to try to conjure up some sort of position for himself. It is alleged he tried to enlist the support of Mike Markkula Jr., who apart from being a founding pioneer, was once President of Apple and holds a hefty 9% of the stock. Add the voting power of that stockholding to Jobs with 11.3% and you had an almost irresistible force.

Markulla refused to be Job's comforter and said the reorganisation would go through.

Exit left, pursued by bear.

(*The latest news on Jobs is he has sold 850,000 shares of his Apple stock in one parcel which gave him a healthy bankroll of $14 million and still left him with 10% of the stock, and that another parcel has just come on the market. Jobs isn't saying what he will do with the money but given his background and his adoration of high tech computers, it would be reasonable to expect him to start up another company in the computer field.*)

By May 29 it was all over as Sculley and the executive committee and staff members started a marathon two day meeting to plan the future of Apple. Jobs was not present at these meetings, which ended with a new pared down Apple with Delbert Yocam running engineering, manufacturing and distribution, Gassee in charge of product development and reporting to Yocam and Campbell responsible for all US sales.

As a direct result of this meeting Apple announced a fortnight later it would close three of its six factories by September and gave notice to 1,200 staff members.

Will these moves solve the problems at Apple?

Many of them, if not all.

There is a new feeling at Apple of trying to encourage third party suppliers instead of trying - as Jobs did with the Macintosh - to hug it all to the corporate chest. While it is early days to judge, the reaction from outside suppliers is quite distinctly one of relief their needs have at last been recognised.

All of those who forecast Apple's early demise should ponder the following - Apple has effectively no long term debts and about US$190 million in the bank. Which should see them through the next few months while the new regime finds its feet.

What Apple is doing

John Sculley appears to have mounted a three pronged attack.

The first move was to rationalise the structure of the company, to cut back costs and to heal the wound which divided the company. Sadly, cost cutting is not an excerise which is immediately reflected in the figures. It takes time.

Rationalising the structure of the company is another matter and Sculley appears to have attained his major objectives in this area in short order.

Healing the wound will not be easy. Both Wozniak and Jobs had this innate talent to build up personal rather than corporate loyalties. Many senior personnel offered to resign along with Jobs although it says much for Sculley's management most notices of resignation were withdrawn after sober reflection.

The second prong of the attack was to reassure retailers - especially in the United States - Apple was on their side and wanted to see them make money and sell more Apples. There is no doubt many of the executives have been afflicted with the belief the genius of Jobs and Wozniak were transferrable by some sort of mystic osmosis.

This is demonstrably untrue if you regard at close quarters some of the executive staff, both leavers and stayers.

The way in which many of them treated the retailers who were responsible for making the sales which would pay their over-inflated salaries was, to be polite, cavalier. Now Apple have disbanded their direct sales force and started to talk to retailers as if they were all members of the same human race and all entitled to make a crust.

This dramatically new approach from Apple will indoubtedly pay dividends.

The third area Sculley and his new slimline executive team are attending to at flank speed concerns the basic difference between the Macintosh and the Apple II line.

Sculley has reversed the declared intention of Jobs to keep the Macintosh entire and pure unto itself and keep everyone else out.

The result is a new revamped model of the Macintosh which will incorporate many of the improvements which have long been eagerly awaited and make the Mac into a true business machine.

And, at the same time, the II line, now longish in the tooth but as game as Ned Kelly, will be given new features to bring it up-to-date in the market place.

With Sculley attending to these three problems and a new leaner, meaner Apple homing in on its targetted markets the future of Apple seems very secure indeed.

If this is so, and rest assured it is, then all the doomsayers are wrong - not for the first time - and Apple, the company we know and love, will certainly be with us into the next century, and probably beyond.

Major Apple initiatives

Part of the marketing plan of the new regime is to upgrade the existing machines as fast as possible. What follows immediately is now official.

1. **The Macintosh is going to get a new CPU** early next year. This is the Motorola 63020 which, while being compatible with the existing software, is a true 32 bit central processing unit which means a major improvement in speed of working.

To understand exactly what this means imagine Sydney had an arterial road 32 lanes wide which came to the Harbour Bridge which was only 16 lanes wide. The result, a slowing down of the traffic. This is what happens with the standard IBM CPU, except the figures are 16 and 8, and it is what happens with the current Motorola 63000. Which is why the new chip will make a major difference to the speed of operating but not, repeat not, to disk access times.

2. **The Macintosh will have an extra parallel port added.** This will mean external disk drives will work at more than acceptably high speeds.

At the moment most hard disk drives are brought in through the serial port. Go back to the example of the Harbour Bridge for the moment and imagine it is being repaired and only has one lane working. The result, a slow down in the speed traffic moves. Open up 32 lanes and the traffic moves freely. Hence the parallel port.

3. **The disk drive on the Macintosh will be changed to 3.5" 800 kilobyte.**

This has been a fairly obvious improvement for some time. There is no inherent increase in problems of reliability in using both sides of the disk and doubling the amount of usable memory storage. The reason why Apple opted for 400k in the first place is that, at the time, nothing else was available. This improvement will greatly enhance the Macintosh and will be a relatively simple upgrade for present machines.

4. **The Macintosh will be available with random access memory capacity going right up to two megabytes, all of it addressable.** Again, this was a fairly easy move to forecast. Upgrades have been available from other suppliers to one megabyte for some time, but only half of it was addressable. The other half could only be used as a RAM disk. This new upgrade shows the speed with which programs expand to fill the space available. In 1977, when the Apple II was launched, you could buy it with 16k and people wondered what you would do with all that memory. Now, you will be able to buy the Macintosh with 2,000k of memory. Thus does memory expand.

5. **Apple will extend further its policy of not making the warranty null and void** if an approved hardware supplier fits a modification, such as a built-in disk drive. This is, plainly, vitally important if Apple is going to encourage an "open architecture" approach to the Macintosh.

6. **A video out port will be added to the Macintosh.**This has been available for some tiime from outside suppliers. It is an important improvement considering the Mac's capabilities as a video production controller.

7. **The Apple II line will be equipped with the same 3.5" disk drives holding 800 kilobytes as the Macintosh.** Again, this has been mooted for some time. This does not, repeat not, mean your standard disk drive will become obsolete and unusable. Merely that, if you are considering adding another drive you will have the option of going for the big memory.

There is no doubt that, eventually, the majority of users will settle for this format. But eventually is a longish way away.

8. **The Apple II will be given a new central processing unit but we have no information as to whether this will be the 16 bit version of the 6502 or not.** Betting is it will be, which will retain compatibility with all the thousands of programs already out there in users' hands.

9. **The Macintosh will be linked to a larger machine from another manufacturer allowing it to be used as a super-intelligent terminal.** AT & T's involvement in this area has been mooted and seems a likely prospect. The fact is that the Macinstosh makes a superb intelligent terminal for any mainframe provided the protols for transferring information are agreed to. This means the awesome graphics capability of the Macintosh can be harnessed to the brute strength of a mainframe.

10. **The suggestion of a possible merger has been rejected** by the authoritative magazine, *Business Week* which said, "A merger apparently remains out of the question for the fiercely independent Apple, despite persistent rumours in Wall Street . . . Insiders own more than 25% making any unfriendly bid unlikely."

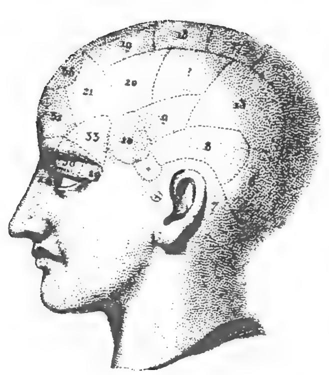
In the July 15 issue of the American trade magazine, *Micro Market World*, Del Yocam, speaking as executive vice-president of the product operations division said:

"The success of the IIe has been the open architecture.. . . We can begin to address things in the future, like putting an Apple II and an IBM PC on the same network . . . So now we've got a lot of the applications for the Apple II side that incorporate a lot of Mac-like features. We have a couple of surpises on both lines." Now if Del - we can't keep calling him Delbert - Yocam doesn't know what is happening, who does?

ThinkTank- Is this really a brand new way of writing well?

by Gareth Powell

Do I believe ThinkTank will improve your writing, your command of the English language?
Do I believe ThinkTank can turn us into a nation of literates?
Do I agree with William Bullock this program is the greatest aid to good English since Roget compiled his Thesaurus?



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I have, over the years, become almost immune to criticisms of my writing. I learned to write in a brutal school where my editor, John Burt, would quietly tear up my copy when it was wrong and make me type it again. And again. And yet again.

It was an early form of aversion therapy. I learned from him, and from a long grey line of sub-editors, to always search my copy for the words "that" and "which" and see if their removal would strengthen the prose. I learned the use of short declarative sentences. I learned to communicate.

To this day my work gets subbed, corrected, rewritten by others. Nowadays sub-editors are kinder to me - or, perhaps, I have become better at writing or I have become inured to savage criticism.

I do not think the last is true.

Criticise the way I write and I will listen carefully. And if your criticisms will improve my style, my grammar, the ease with which the reader can assimilate my ideas - then I will modify my ways to effect those improvements. Only recently Arnold Earnshaw, one of Australia's greatest sub-editors ,sat and took me to task over loose phrasing. I listened, took heed, mended my ways.

But one thing I cannot change. At least, I do not believe I can change. The way in which my brain works when I write.

> **"I believe my subconcious mind works on articles when I am engaged in other activities - drinking beer, sleeping, watching the grass grow - until they are in a completed form in my mind."**

When I sit down to hammer out an article like this, I see the finished work as a whole, complete and entire, before I ever touch a keyboard.

I believe my subconcious mind works on articles when I am engaged in other activities - drinking beer, sleeping, watching the grass grow - until they are in a completed form in my mind.

When I write a book the process is somewhat different simply because of scale.

First of all I see the outline and then I envisage each chapter and visualise the way in which it will move the book forward. Then, when I start writing I have my plan, my style, my approach, clearly in view. My brain has conducted a sorting process which has resulted in a completed form.

It is true I am sometimes not wholly conscious the form exists. It is also true I sometimes, although this is very rare, change the form and the plan when I am part of the way through a piece of work. And it is certainly true I frequently totally scrap writing because I am unhappy with it and feel it is beyond redemption.

There is a second habit I could never change. Whether it is an article or a book, when I am finished I rewrite, and rewrite. And then, yet again, rewrite.

Whether what I write pleases the reader is another matter. Over the years I have learned it pleases enough readers to keep my editors happy, although I doubt

ThinkTank - a better way of writing?

my articles will ever be used as exemplars in a school of journalism.

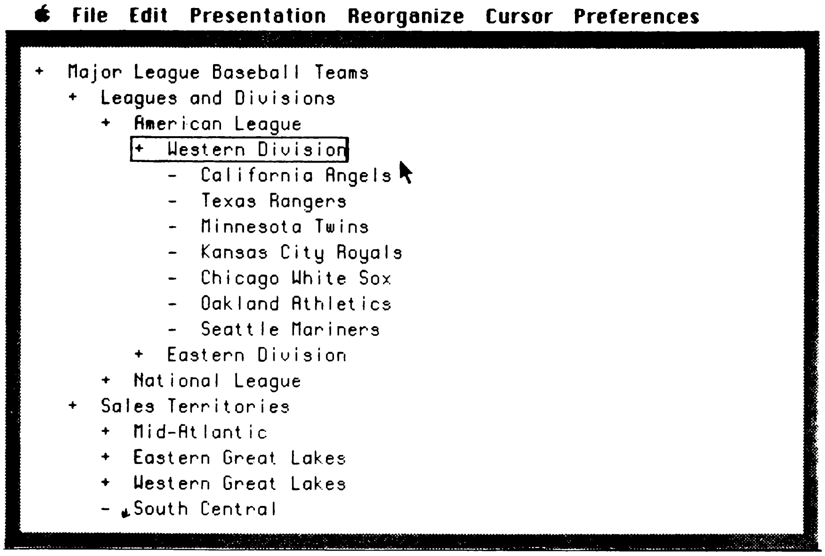
When I write it is with the finished product already in my mind.

Which is why I have been looking at a new program - at least new to me - both with great interest and with more than a fair amount of scepticism.

"It is both a word processor and a thought processor. My worry is it will work in much the same way as a food processor and turn everything into a bland, homogenised mass."

The program is called *ThinkTank* and it is currently available for the Macintosh and the Apple IIe. The version I tested was for the Macintosh which, in a way, is probably the ideal machine for the progran.

In a sense *ThinkTank* tries to formalise the creative process.



```
+ Major League Baseball Teams
   + Leagues and Divisions
      + American League
         + Western Division
            - California Angels
            - Texas Rangers
            - Minnesota Twins
            - Kansas City Royals
            - Chicago White Sox
            - Oakland Athletics
            - Seattle Mariners
         + Eastern Division
      + National League
   + Sales Territories
      + Mid-Atlantic
      + Eastern Great Lakes
      + Western Great Lakes
      - South Central
```

It is sad that all the examples in the book of instructions are centred around American baseball teams. Nevertheless it shows the way ThinkTank divides into sections and sub-sctions and sub-sub sections.

It encourages you to start with headings and then to expand those headings into sub-paragraphs, sub-sub paragraphs and on into infinity until the subject is totally covered.

It is both a word processor and a thought processor. My worry is it will work in much the same way as a food processor and turn everything into a bland, homogenised mass.

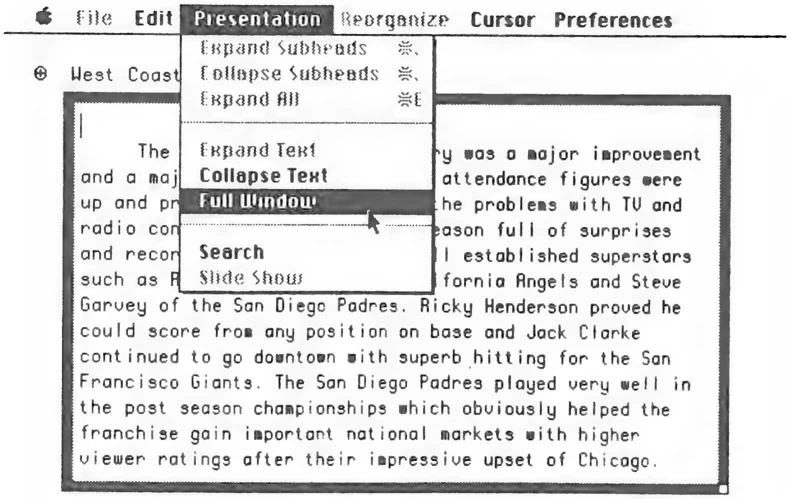
This worry about the effect of the computer, word processing programs and idea processing programs is nothing new. It has been expressed by far abler pens than mine, notably that of the English author Iris Murdoch. Computers have their place, she avers, but do they help or hinder creative writing?

They certainly have not helped the publicists or the technical writers concerned with *ThinkTank.*

I have always accepted you should not judge a book by its cover nor a program by its instructions. But a special case can be made for *ThinkTank.*

"If, as it is claimed in the publicity, 'ThinkTank helps you sharpen an inspired thought, weed out a weak idea, set priorities, weigh alternatives' then surely the handbook must be a thing of transcendental beauty."

If, as it is claimed in the publicity, "*ThinkTank* helps you sharpen an inspired thought, weed out a weak idea, set priorities, weigh alternatives" then surely the handbook must be a thing of transcendental beauty.



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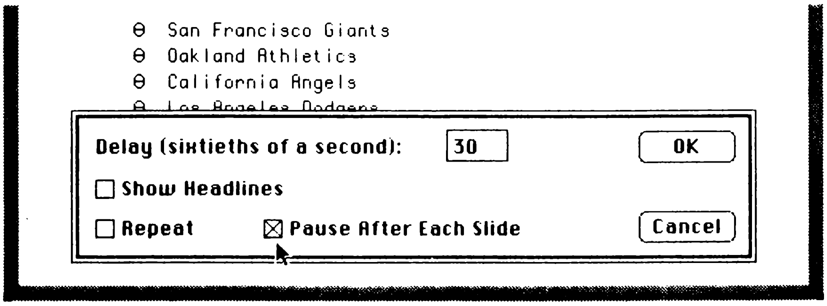
    The                        y was a major improvement
and a maj                      attendance figures were
up and pr                      he problems with TV and
radio con                      eason full of surprises
and recor                      l established superstars
such as R                      fornia Angels and Steve
Garvey of the San Diego Padres. Ricky Henderson proved he
could score from any position on base and Jack Clarke
continued to go downtown with superb hitting for the San
Francisco Giants. The San Diego Padres played very well in
the post season championships which obviously helped the
franchise gain important national markets with higher
viewer ratings after their impressive upset of Chicago.
```

When you move into the 'full text' format you have, in effect, a straightforward word processor. And a powerful one at that.

ThinkTank - a better way of writing?

The publicity explains how easy the process of writing can be with the wonders of *ThinkTank* at your disposal: "Just put your thoughts into the flexible outline format, to organize and expand, edit and evaluate. It's like a spreadsheet for ideas. While all this structuring helps your brainchild take shape, it won't inhibit the natural flow of creative juices. Because entering an idea onto *ThinkTank* is as easy as scribbling it on to a cocktail napkin. All you need is simple English."

"As a matter of brutal truth I never scribble ideas on cocktail napkins. Firstly I do not drink cocktails. Secondly, the bars I drink in do not provide napkins. Thirdly, when I drink, I drink."


⊖ San Francisco Giants
⊖ Oakland Athletics
⊖ California Angels
⊖ Los Angeles Dodgers

Delay (sixtieths of a second): 30

☐ Show Headlines

☐ Repeat ☒ Pause After Each Slide

Run a slide show of images - not text - using the Mac version of ThinkTank and select your own delays between slides.

As a matter of brutal truth I never scribble ideas on cocktail napkins. Firstly I do not drink cocktails. Secondly, the bars I drink in do not provide napkins. Thirdly, when I drink, I drink.

When I write I do it elsewhere.

It is a mistake to think the two processes go naturally together.

Let us take another paragraph from the publicity for *ThinkTank* and pause to admire the lucid prose "Just let your thoughts flow - from 'pie in the sky' concepts to the 'nuts and bolts' details. And build more professional proposals, marketing plans, legal briefs, case reports, engineering specifications, research notes, action items, hot lists and to-do lists."

The thought of all those trees dying for all those trees dying for "action items, hot lists and to-do lists" is worrying. In truth, the instruction book is not as badly written as the publicity.

But it is still pretty vile.

"I was tempted not to test the program for fear it might damage the brain, but now I am perfectly assured I have none, like Father William, I willingly take the risk."

Let me just give you the brief introduction.

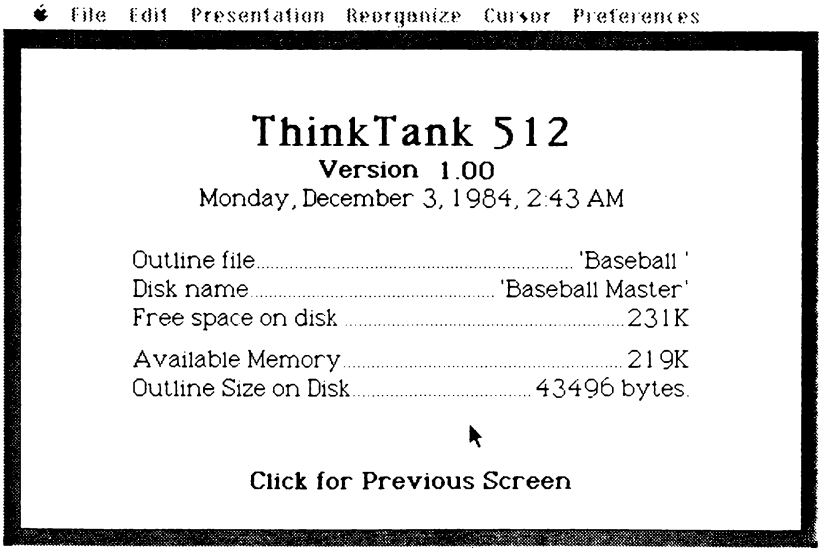
"Welcome to ThinkTank - a dynamic outlining tool for developing the full potential of your ideas.

With ThinkTank, you can let your thoughts flow freely. When you're ready you can easily arrange your ideas on the screen into headings and subheads to see how they fit together. You can hide or reveal any part of your outline on the spur of the moment, to shift your attention from details to 'the big picture' and back again. The hard work of thinking never seemed so natural - or like so much fun!"

I was tempted not to test the program for fear it might damage the brain, but now I am perfectly assured I have none, like Father William, I willingly take the risk.

The truth is not in the publicity.

Which should not and does not condemn any program out of hand. Publicists, as a general rule, are not over-concerned with nit-picking veracity.



ThinkTank 512
Version 1.00
Monday, December 3, 1984, 2:43 AM

Outline file .... 'Baseball '
Disk name .... 'Baseball Master'
Free space on disk 231K
Available Memory 219K
Outline Size on Disk .... 43496 bytes

Click for Previous Screen

A program that starts off by giving you the date and time in a civilised format cannot be all bad. Opening screen of ThinkTank.

PROGRAM REVIEW

ThinkTank - a better way of writing?

Nor do I think the people who produced the program - Living Videotext Inc. - set out consciously to market the program as a writer's tool. This is apparent from the example you are given to work through which appears to concern itself with the relative merits and demerits of American baseball teams. I think the programmers started off with the idea of a sophisticated list processor and, like Topsy, it just growed.

> **"The truth is not in the publicity. Which should not and does not condemn any program out of hand. Publicists, as a general rule, are not over-concerned with nit-picking veracity."**

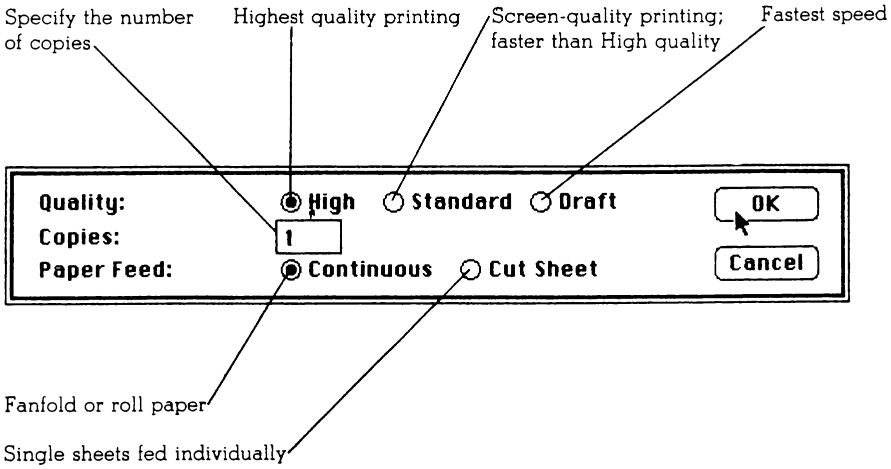
Jerry Pournelle, the noted columnist of *"Byte"* magazine, uses *ThinkTank* for his work. Apart from being one of the best computer columnists in the world - albeit lacking in self-discipline at times, and I should talk - he is also a novelist producing science fiction.

Now, it is fair to say I have no idea whether he uses *ThinkTank* for his creative writing. But I would be astounded if he did. It simply isn't that sort of program.

ThinkTank is a writing tool for people who are not used to writing for a living. It is a program for people who are intimidated by a blank sheet of paper in the typewriter or a blank computer screen. For people who suffer from writer's block.

If you need to write reports, and you have problems in following a logical pattern, then *ThinkTank* can undoubtedly help you. (So can a scrap pad and a pencil but this is a computer magazine and a program review.)

If you find putting your thoughts in order less than simple; if you have problems in writing reports that start at the beginning and then go in a direct line to the end, then *ThinkTank* is for you.



Quality: ● High ○ Standard ○ Draft
Copies: 1
Paper Feed: ● Continuous ○ Cut Sheet

OK
Cancel
Specify the number of copies
Highest quality printing
Screen-quality printing; faster than High quality
Fastest speed
Fanfold or roll paper
Single sheets fed individually

I am trying not to be pretentious or precious when I say I would be extremely worried about the effect using such a program would have on a creative writer. The argument that structured programming is better than spaghetti programming, therefore structured writing is better than creatively free writing leaves me cold.

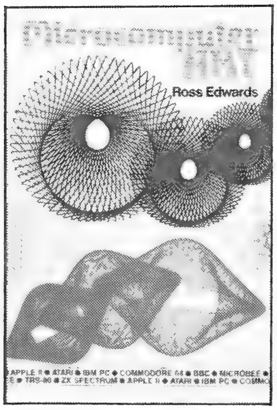
ThinkTank is fine for non-fiction.

But it is not, I think, for creative writers.

It is not, I believe, for writing professionals.

I do not see it as a strait jacket. Neither do I see it as a creative aid. Just, I believe, not for me.

With this new Australian book
MICROCOMPUTER ART
by Ross Edwards
you only need an elementary knowledge of BASIC programming and an appreciation of art to generate elaborate spirographic patterns.



- For the IBM PC, Apple IIe, Commodore 64, BBC microcomputer, ZX Spectrum and the Microbee.
- Hundreds of beautiful patterns are illustrated, with comprehensive data tables from which to generate them.
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ThinkTank - a dissenting view

Our first reviewer of ThinkTank was, we thought, a little on the negative side. We asked novelist Jean de Lille to test the program out for us and see whether he agreed with the view that ThinkTank was not for the professional creative writer. He did not agree and argues the concept has been used by writers for at least thirty years - if not for centuries.

In a very real sense, I have been using ThinkTank for nearly twenty years. I was first introduced to the idea by fellow novelist Dianne Doubtfire at a Writers' Summer School in Britain in 1967. She had been given it by the late Winston Clewes at the 1954 Writers' Summer School in Derbyshire which makes the concept at least 30 years old. In truth, I have a feeling it has been around since the 17th century.

Dianne feels very strongly that a novel should flow. She says, "A novel should be fluid from the start - a voyage of discovery, full of surprises." The readerssuggested method of working is both simple and effective.

When you are about to write a novel your brain is full of ideas, scenes, characters - some sharply and precisely delineated, some still out of focus. Writing the novel is, in practice, sorting out these scenes and characters so they fit a consistent theme and they carry the reader foward through the novel.

Dianne suggested to me writing down the numbers 1 to 30 on a large foolscap sheet of paper and writing against each number a one sentence summation of the scene that would form the basis for a chapter.

Thus 1 gives a possible opening, 2 introduces the principal character and so on. This device is called a chapter sheet. The figures are, of course, arbitary but as my novels tend to be around 100,000 words in length and each chapter around 3,000 words, starting with thirty scenes normally fits in well with my writing style.

> "In a very real sense, I have been using*ThinkTank* for nearly twenty years. "

As the novel progresses I take each of these scenes and flesh it out with character and incident. As I start to write, the novel and its characters take over, toacquire a dynamic of their own. It is then I find some scenes are no longer needed - some need to be expanded to three, four or even five scenes.

To keep my numbering system intact any additional scenes become, as an example, 5A, 5B and so on.

Once I am fairly sure where I am going, what my theme is, who my characters are and how the react, one to another, I then expand each one sentence description of a scene into a full paragraph. This has been called "doing a *Moll Flanders*". The phrase comes from the title of a novel by Daniel Defoe. At the beginning of each chapter of this amusing, if picaresque novel, the author gives a summary of the events which will be described in the chapter - a trailer for the main event, as it were.

They read, "In which Moll comes to London, meets up with various theives and cutpurses, gets involved in a tavern brawl . . ." and so on.

My chapter descriptions lack Defoe's picturesque turn of phrase and are excised from the finished manuscript but, in essence, are written on the same basis.

In testing *ThinkTank* I have found it a computer adaptation of a disciplined novelist's method of writing. I write in my chapter headings as main subjects and then expand them, a la Defoe, into full chapter descriptions. Where I need to insert or delete a scene it is but the work of a moment.

I have so far only used *ThinkTank* to work up an outline of a novel set in Western Australia but I can see no reason on earth why it should not be used for writing a complete novel.

ThinkTank merely takes the process suggested to me by Dianne and incorporates it into a word processing routine. I consider it a first rate program. It is a pity the documentation appears to have been written by a functional illiterate - but which of us is perfect?

Manipulating Images

a new role for the computer

This article originally appeared in a shortened version in the "Sydney Morning Herald." If you read it there we apologise. But not all of our readers live in New South Wales, not all that do read the "Herald", not all that read the "Herald" will have seen this article. The program it describes is perhaps one of the most innovative yet introduced for the Macintosh. It brings a new dimension to personal computers and what they can do.

by **Gareth Powell**

Last night I let Janet Leigh get overexcited in the shower before Anthony Perkins knifed her. Sexist. Vulgar. Crude. But true.

How I managed this feat is of more than passing interest because it shows a way computers may travel.

I was using a Macintosh and I had the first scene from *Psycho* digitised and placed in the memory.

(Before you ask, yes the image was grainy and it was in black and white but you and I both know graphics are improving by the day and high resolution colour is just around the corner. Anyway, what I am trying to get across is the concept.)

> **"Once the image was digitised I was able to take each frame and alter it as subtly or as unsubtly as I wished. "**

Once the image was digitised I was able to take each frame and alter it as subtly or as unsubtly as I wished. Being of vulgar Celtic origin I marked out the lovely Miss Leigh's head on the screen and then selected a part of a program which let me move the image from side to side as often as I wished.

It took me a little while to get the timing right but eventually it all came together.

> **"It took me a little while to get the timing right but eventually it all came together."**

Finally, to add a touch of Grand Guignol, I had her eyeballs rotate in her head when the shadow of the blood-crazed Perkins complete with knife fell on the shower screen wall. Then I made them pop out, fly around a while and and then nip off the computer screen.

The interesting point is not that my sick perverted mind led me to do these things but rather I could do them at all. Samuel Johnson once said something similar about a dog walking on his hind legs.

What, in fact, I was doing was modifying movies without a studio or film or a camera. The next step, obviously, is to make, rather than edit, a movie without using a studio or a film or a camera.

And you can now do this on the Macintosh with a remarkable program called *Storyboarder* which I believe is set fair to revolutionise the television and advertising industries.

> **"You can now do this on the Macintosh with a remarkable program called *Storyboarder* which I believe is set fair to revolutionise the television and advertising industries."**

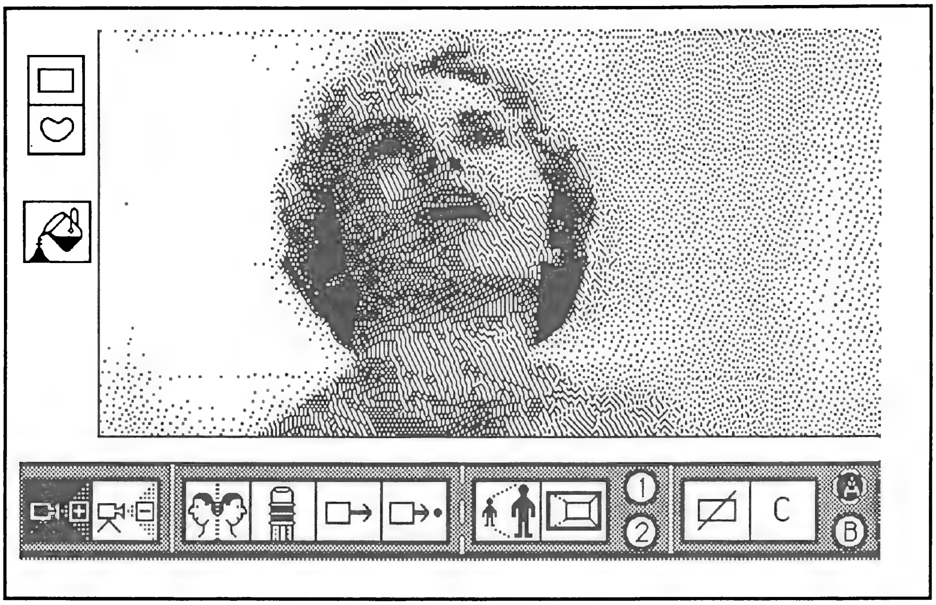
A storyboard in the advertising world is a series of sketches - sometimes beautifully detailed, sometimes rough images - showing the way a television commercial will be shot, what pictures and words will appear on the screen and how the sales message will be put across.

This works very well if the agency has a client with a lively imagination and an ability to visualise the finished product. Not all clients are so endowed.

This leaves the agency with two basic choices.

Push on regardless and hope the client will love the finished product. Or get a

Manipulating images with a computer



A typical screen in storyboarder showing clearly the collection of editina tools available to the movie director.

sort of cartoon rough-cut made by a speciality house using a system called "Animatronic".

The first, if it goes wrong, costs somebody, somewhere a bundle of money and much pain and grief, tearing of hair and gnashing of teeth.

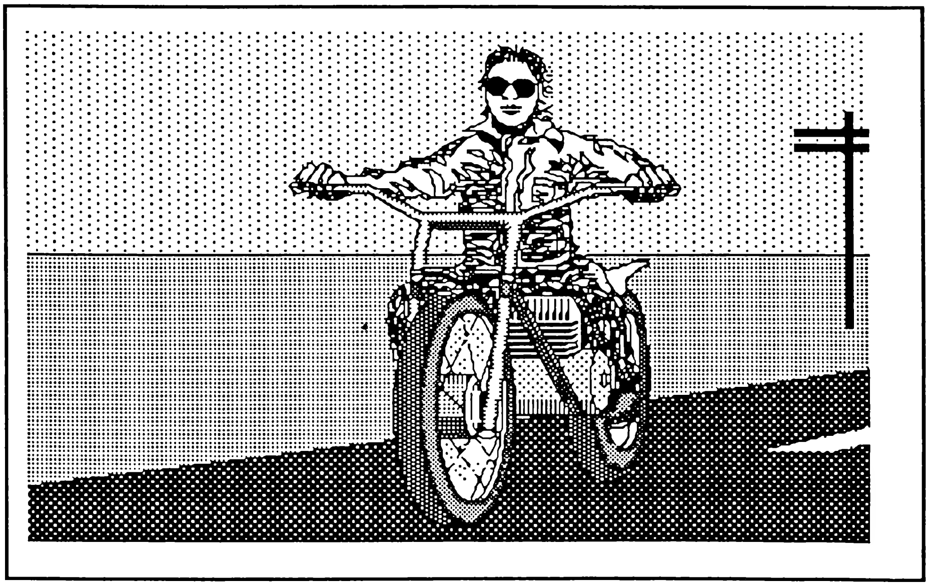
The second method is safer but is not cheap and adds substantially to the end price.

Now along comes *Storyboarder* which allows you to effectively put the movie on the screen before a single frame of film moves through a camera.

Let me take you for a guided tour so you can understand the principles of this quite amazing concept.

> **"The first, if it goes wrong, costs somebody, somewhere a bundle of money and much pain and grief."**

The scene opens - as the phrase has it in popular movies - with a master list on your computer screen looking not unlike a spreadsheet. It is here the user - who should be referred to by some more honorific title - edits and creates the storyboard.



This image is used to construct a sequence of a motorcyclist riding down a highway. Note the lack of a helmet. Tut.

The user selects images from the "library" - that is, in truth, what it is called. This library of images can be set up beforehand either with digitized images produced from film, as I had with *Psycho*, or with line drawings as in cartoons, or with a mixture of both.

These images can be transferred from the library to the master list you are using in any order you wish. Each image has a duration box where you can enter the amount of time it is to remain on the screen. There is a second box, called enigmatically EFX, where you can select from a series of techniques between shots such as cuts, dissolves, fades and wipes. If you are not into movies don't worry about it but, effectively, all the standard film editor's tools are there.

Because cinema screens are one shape and television screens another you can also select what is known as the aspect ratio which dictates the shape of

> **"You can select from a series of techniques between shots such as cuts, dissolves, fades and wipes."**

Manipulating images with a computer

screen. And if you want a quick idea of how you are going you can mount up to nine full frame images on the screen at the same time.

There is space on the master menu for you to enter notes on what you intend to do when, with whom and how in a given sequence. These are neatly tucked out of sight when you are working on the main menu but can be brought forward at any time.

"And if you want a quick idea of how you are going you can mount up to nine full frame images on the screen at the same time"

You can, of course, easily shuffle the order of images, until you have a pleasing end result.

True, it lacks fine detail but this shot of Miss Leigh's mouth is more than good enough for movies where images move..

Nothing miraculous yet, but hang in there.

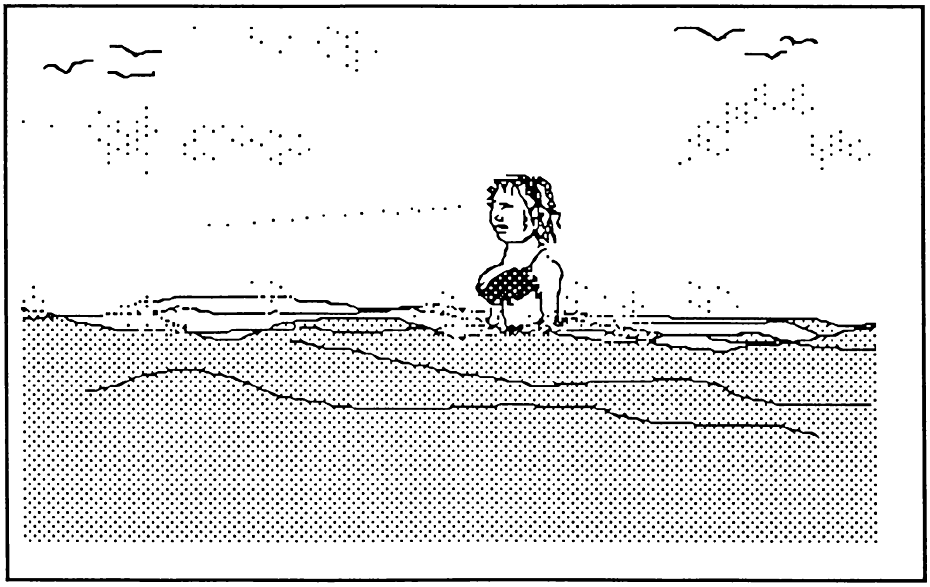
Once you have your basic framework you can modify each of your basic frames through zooming - four stages possible - panning, reducing, distorting, inverting, flipping images horizontally or vertically. Which is what I did with the the unfortunate Miss Leigh. Flipped her image.

What you now have is a sequence of frames you can run through rapidly, controlling the duration of the images and the transition effects. And yes, when I did it, I shouted out "Ready to roll when you are, Mr Goldwyn."

"The quality of the end product depends, of course, on the images you place in the library. The old computer rule of GIGO, garbage in garbage out, fully applies. "

The quality of the end product depends, of course, on the images you place in the library. The old computer rule of GIGO, garbage in garbage out, fully applies. Which is why I was working with frames from a movie made by Alfred Hitchcock. But I could have, with equal facility, introduced other images that were drawn, photographed or filmed.

The limitations of this system are



Part of a cartoon series showing a young lass taking a swim and being eaten by a shark. Not great art, but true cartooning.

Manipulating images with a computer

technical and are relatively easy to solve.

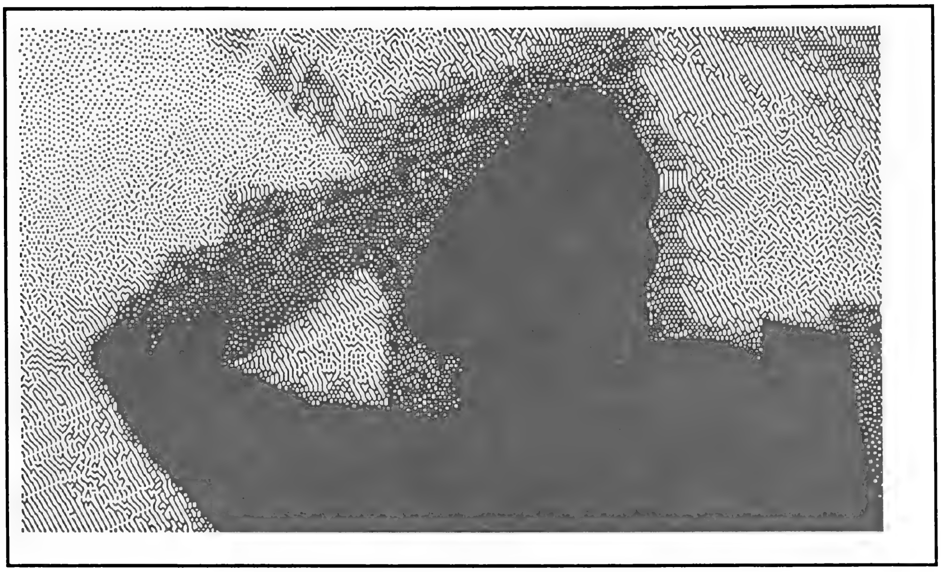
The first concerns disk space.

The longer the television commercial, the more frames you will need and the sooner you will run out of disk space. So you need a large hard disk of, say, 20 megabytes (what we of the computer cognoscenti call a twenty gallon drum) to store the images if you want anything more than a quick flash.

Which means that either you get a now out-of-production Macintosh XL, which is not easy - or you hang one of the many different commercial hard disks available on to a standard Macintosh. Bit of a problem here, as the rate information can be transferred is not what you would call lightning quick. Of course, there is the built in hard disk drive - it exists, Apple in Australia have one and I have used it - but it is only 10 megabytes and is not yet available on the Australian market.

The obvious and logical answer is, of course, optical disks. All of the memory in the world - as in one gigabyte which is a thousand megabytes which is more than enough for the moment, thank you very much. After all, we are not making *Gone with the Wind.*

As yet I have come across no commercially fitted up optical disk on a Macintosh but, without doubt, they exist. If only in the United States. My guess is they will be readily available here before Christmas when all of the memory problems will have been solved.



Miss Leigh's view of the lust crazed Perkins from inside the shower. Part of the Mac movie, 'PsychoMac'.

The second concerns quality of image.

Although the Macintosh has the highest resolution screen in personal computers I am aware of, you can still see quite plainly the images are digitised.

Thirdly, at the moment the Macintosh shows the images in the full glory of black and hite.

But *Storyboarder* was written as a program to accept colour input and give colour output.

Constant readers may recall I had a preview of a colour Macintosh earlier this year on a visit to England. The machine had been modified - not by Apple - and the results were glorious. Off hand I think it gave a palette restricted to 16,800,000 tints, or some similar damn ridiculous figure.

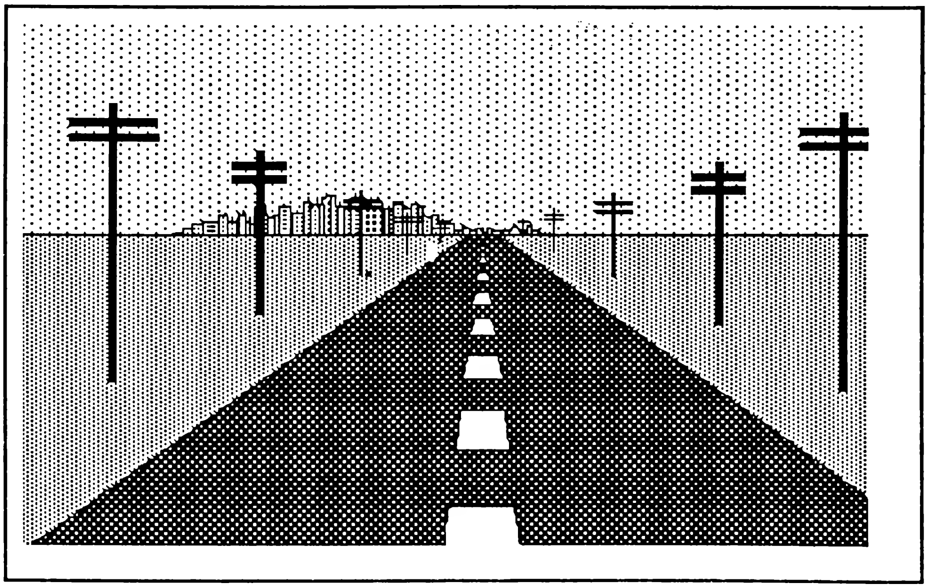
So it is possible Apple will release a colour Macintosh, perhaps early next year.

What we have at the moment is a program and a machine able together to make perfectly stunning animated black and white movies complete with much of the gadgetry of the movie world for an all up price of $10,000.

And this is but the first version. The company producing the program, American Intelliware, are working feverishly on further improvements.

I keep trying to imagine where it will all end but the mind boggles.

I wonder what Fox Talbot would have made of all of this?



Typical of the sort of scenes which can be built up in the library to form the basis for a cartoon movie presentation

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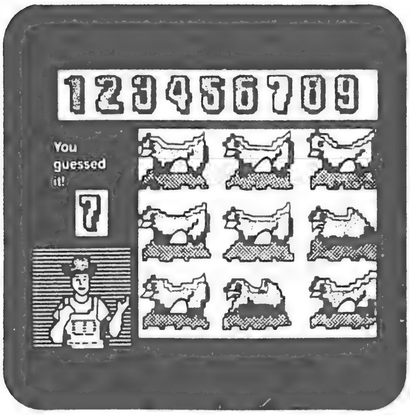

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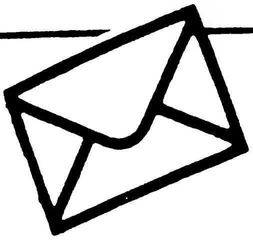

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Programmers Apple Aid

by

Derek Chan

Apple Colours

Everyone knows that the APPLE is capable of displaying 16 colours in the Low Resolution Graphics Mode (Lo-Res) and 6 colours in the High Resolution Graphics Mode (Hi-Res). Well, this is not strictly correct as the following short program will illustrate - tap it into your APPLE and see for yourself.

```
 10 HOME : HGR
 20 FOR COL = 0 TO 255
 30   POKE 228,COL
 40   HPLOT 0,0 : CALL 62454
 50   VTAB 23
 60   PRINT "COLOUR CODE = ";COL:PRINT
 70   PRINT "HIT ANY KEY TO CONTINUE ";
 80   GET K$ : HOME
 90 NEXT
100 TEXT : HOME
```

The memory location 228 (hexidecimal $E4) contains the colour code for the colour specified by the APPLESOFT statement 'HCOLOR =' . For example when HCOLOR = 1 (green) the value 42 will be stored in location 228 ($E4). In the FOR..NEXT loop we try out all possible values of the colour code 0 to 225 ($00 to $FF). Enjoy the colours, some of then are rather pretty !

In the APPLE ROM there are loads of high quality software or firmware (the Editor will surely make me do penance for using computerese) that good programmers should use. After all why try to reinvent the wheel, as they say in the MacIntosh trade, when it's been done for you for free. Line 40 is one such example. There is a MONITOR subroutine called BKGND with entry point 62454 which fills the Hi-Res screen with the last HPLOTted colour. This is considerably faster than trying to accomplish the same task with HPLOT statements. Do compare if you are skeptical.

Hi-Res Pages

The APPLESOFT Manual tells us that there are two High Resolution Graphics Pages. These can be invoked by the APPLESOFT commands HGR for Hi-Res Page 1 and HGR2 for Hi-Res Page 2.

Internally APPLESOFT keeps track of which of the two Hi-Res Pages to draw on, for instance in response to a HPLOT statement, by storing an appropriate number in the location 230 ($E6). This memory location is called HPAG.

If graphics outputs are to be sent to Hi-Res Page 1 the content of HPAG will be the number 32 ($20); if Hi-Res Page 2 is to be used HPAG will contain 64 ($40).

This is true irrespective of which Hi-Res Page is being displayed.

The standard technique of producing smooth flicker-free graphics animation is to draw and display successive frames of the moving picture alternately on the two Hi-Res Pages. That is we display a frame on Page 1 while drawing the next frame on Page 2. The display is then flipped over to show Page 2 while the following frame is being composed on Page 1. This repeated to give a smooth animation sequence.

The curious APPLE devotee may ask: Where will the graphics output go if other values are stored in HPAG ? The answer is, not surprisingly, to Hi-Res Pages 3 or 4 or 5. No there have been no misprints !

The APPLE Hi-Res Graphics system is Memory Mapped. This simply means that the hardware circuitry has been constructed to display the numerical content of specially designated memory locations as dots on the video screen. Hi-Res Page 1 corresponds to the locations $2000-$3FFF; while Page 2 corresponds to $4000-$5FFF.

Now if the value 96 ($60) is stored in HPAG, Hi-Res Page 3 ($6000-$7FFF) will be used for graphical outputs; the value 128 ($80) will get us Page 4 ($8000-$9FFF) while 160 ($A0) in HPAG will get us Page 5 ($A000-$BFFF).

WARNING:

Drawing to Pages 4 and 5 will trample over DOS unless DOS has been moved to the language card area. With DOS active the highest available memory (HIMEM) is $9600.

There is, however, no way for the APPLE hardware to access Pages 3-5 directly. To display these Pages, the content of these pages must be copied onto Pages 1 or 2 and then displayed as usual.

I will leave it to the curious reader to explore the effects of storing other values in HPAG. The hexidecimal values of the content of HPAG and the starting address of the Hi-Res Pages look interesting.

I would strongly suggest saving any such exploratory programs BEFORE actually running them - otherwise the consequences may be blood curdling .

Don't forget to set HIMEM accordingly. Write in and share your interesting experiences with these extra Hi-Res Pages.

Programmers Apple Aid

Textigraphics Soft Switches

These are not the results of short circuiting your APPLE.

These are peculiar memory locations that have intimate links with the APPLE hardware. By writing to these memory locations it is possible to make the APPLE do interesting things.

The general way to use these soft switches in APPLESOFT is by the statement:

```
POKE SWITCH,0
```

The value of SWITCH depends on what we would like to do. What is being written to these memory locations or SOFT SWITCHES it irrelevant - so 0 is as good as any value. The TEXT/GRAPHICS SOFT SWITCHES are the eight locations 49232-49239 ($C050-$C057). These allow us to select between:

1. Text or Graphics Modes OR Display.
2. Full screen graphics OR Mixed Graphics and Text.
3. Display Page 1 OR Page 2. These may be Page 1 or 2 of the Graphics or Text screen depending on the whether Graphics or Text Mode is being selected.
4. Hi-Res OR Lo-Res Graphics.

The value of the switches are as follows.

Effect	**Switch**
Graphics Mode	49232
Text Mode	49233
Full Screen Graphics	49234
Mixed Text/Graphics	49235
Page 1	49236
Page 2	49237
Lo-Res Graphics	49238
Hi-Res Graphics	49239

For example, to select Full Screen Hi-Res Graphics Page 1 we execute the program segment:

```
POKE 49232,0        Graphics Mode
POKE 49234,0        Full Screen
POKE 49236,0        Page 1
POKE 49239,0        Hi-Res
```

Note the Text/Graphics Mode switch should always be selected first. For the other switches, once selected do not have to re-selected again unless changes are desired. For instance, in Graphics Animations we may want to display Page 1(2) while we draw on Page 2(1). This can be accomplished by the pair of statements:

```
POKE 230,32         Draw on Page 1
POKE 49237,0        Display Page 2

POKE 230,64         Draw on Page 2
POKE 49236,0        Display Page 1
```

Moving memory

This is not a reminiscence about an encounter with Robert Redford or Bo Derek or Boy George - depending on your predelictions. In a family computing magazine I am not permitted to be more explicit.

On occasions you may like to move the contents of a block of memory to another location. For example, you may want to move a picture you have drawn on Hi-Res Page 3 to Page 2 to be displayed. This can of course be done by PEEKs and POKEs as follows:

```
FOR I = START TO FINISH
POKE (DEST+START-I) , PEEK (I)
NEXT
```

where the source data is in between memory locations START and FINISH; and DEST is the starting address of the destination location. Unfortunately this method tends to be unacceptably slow.

An alternative is to use the subroutine in the MONITOR in ROM. This subroutine is called MOVE - entry point -468 ($FE2C). In fact, MOVE is a misnomer. The content of a specified block of memory is COPIED to another location; but the original memory remains unaltered.

In order to use MOVE we need to specify the various addresses:

1. The two byte STARTing address must be stored in locations 60 and 61 in the usual low byte first convention. The locations 60 and 61 are referred to as A1 in the official APPLE literature.

2. The FINISHing address must be in locations 62 and 63 which are known as A2.

Programmers Apple Aid

3. The DESTination address must be in locations 66 and 67, known as A4.

4. The Y-Register of the 6502 Central Processor Unit (CPU) must be set to 0.

The above data can be set up with the program segment:

```
1  POKE 60, START -
   INT(START/256)*256:
   POKE 61, INT (START/256)

2  POKE 62,
   FINISH-INT(FINISH/256)*256:
   POKE 63, INT (FINISH/256)

3  POKE 66, DEST - INT
   (DEST/256)*256:
   POKE 67, INT (DEST/256)

4  CALL -182: POKE 71,0: CALL -193

5  CALL -468: REM  Call MOVE
```

Line 4 has the effect of storing a 0 in the Y-Register of the 6502 CPU. Since there are no direct ways of storing values in the Y-Register in APPLESOFT, we call on two other subroutines in the MONITOR ROM.

The first one is called SAVE (-182) which SAVEs all the contents of all the internal registers of the CPU in predetermined memory locations in RAM. In particular, the content of the Y-Register is SAVEd at location 71.

The other subroutine we used in line 4 is RESTORE (-193), which as the name suggests does the exact opposite of SAVE. Thus by changing the value of location 71 between a call to SAVE and a call to RESTORE we have effectively changed the value of the Y-Register.

If you have not noticed you have just been manipulating the CORE OF THE APPLE - that is the 6502 CPU directly. It has not been too painful....

[The remainder of this column has been censored to maintain the moral standard of this journal. ED.]

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		TOTAL	

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ADDRESS: ------------------------------------

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CARD NO ☐☐☐☐☐☐☐☐☐☐☐☐☐☐ EXP.DATE /

Logo and the amazing turtle

by

Derek Chan

In this age of High Tech, it is not surprising that there is a dollar to be made when one gets involved with computers. Just about every major daily newspaper now features a regular Computer Supplement. In some cases these amount to little more than a collection of advertisements thinly disguised as timely press releases of interest to the computer community. Of course, the publishers benefit because such supplements are sources of lucrative advertising revenue. This cynical observation is designed to capture your attention. Since you, the reader, have got this far in this article, I now have your attention.

Computers and education

The purpose of this article is not to examine the monetary gains associated with High Tech, but to address the question of what can one do with a personal or microcomputer in the field of education.

> **"The most obvious application is to run educational software packages developed for computer aided learning."**

The most obvious application is to run educational software packages developed for computer aided learning. These range from unimaginative flash card or simple questions-and-answers type offerings to fairly imaginative exercises which allow the student to explore, discover and learn about the subject. Examples of the latter are SOME of the programs offered under the PLATO series by Control Data. Of course, the suitability of computer aided education depends to a large extent on the subject matter.

Another use for computers in schools is to familiarise the student with the operations and limitations of the computer. Such exercises can certainly foster hopefully more than nodding aquaintance with common classes of software such as data bases, word processing and graphics packages andelectronic spreadsheets or integrated packages that combine the above features and then some. The student can thus be bettered prepared to enter the job market or further vocational training that requires contact with computers.

> **"Which of the many programming languages should one learn ?"**

The third use of computers in education, and one that is often touted in advertisements to sell computers, is to learn programming and to give Bruce or Beryl a head start in tomorrow's computer world.

The question that bothers me most here is what should Bruce or Beryl compute ?

And which of the many programming languages should one learn ?

BASIC vs LOGO

For microcomputers, BASIC is the most readily available programming languages. One of its most attractive features is that it is interpretive. That is to say one writes the program is a human understandable form and the program instructions can be executed immediately - the computer interprets the instructions on the fly.

For other languages such as FORTRAN or Pascal the program instructions had to be converted (or compiled, in computerese) into machine code before execution. By eliminating this intermediate compilation step, there are considerable savings in overhead in computer memory and extra software, (a special program is needed to do the conversion to machine code) and in the turn around time between making changes to a program and seeing the effects of the changes. This time saving more than offsets the loss in speed in the actual running of the program, especially in simple programs.

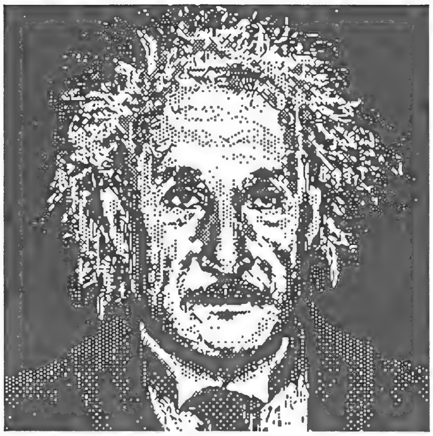
It has also been claimed that BASIC is easy to learn - because there are few RESERVED WORDS or PRIMITIVES such as FOR...NEXT, GOTO, GOSUB etc.

This is certainly true.

Unfortunately, this is also the major limitation of BASIC. The very fact that there are few RESERVED WORDS together with the simple and inflexible syntactical structure means that it is very easy to do simple tasks with BASIC but rather difficult to do something interesting. It is analogous to trying to write interesting literature equipped only with an early primary school vocabulary.

"This time saving more than offsets the loss in speed in the actual running of the program, especially in simple programs."

Indeed the "simplicity" of BASIC, which is often the reason given for promoting BASIC, arises not for the convenience of the user of BASIC. The limited expressive power of BASIC is really to make life easy for the computer designer - to make the process of interpreting and executing the human understandable instructions an easier task. For instance, the abominable necessity to append a "$" to a string variable or a "%" to an integer variable is really to let the language designer know how much memory he needs to allocate for a given variable. For example, APPLESOFT requires five bytes of memory (or five locations) to store a real variable such as 25.246 but only two bytes to store an integer variable i.e. a whole number with no fractional parts.



Would Einstein have written his theory of relativity in Logo? Very possibly.

As a consequence the general idea of learning programming, which is a fancy way of saying to tell the computer what you would like it to do, rapidly becomes an exercise in learning to wear a mental straitjacket. Due to the design of the programming language one is forced to perform mental contortions in order to be able to implement one's ideas in a program. There are many who will truly find such chores intrinsically interesting. These computer jocks will no doubt find fulfilling and sucessful careers as software engineers. For the average student, however, such exercises are downright boring.

"Due to the design of the programming language one is forced to perform mental contortions in order to be able to implement one's ideas."

Many high level languages are available on the APPLE II and some are particularly suitable for special applications: FORTRAN for scientific computations, COBOL for business oriented programs and so on. Of these languages, LOGO occupies a unique position, being a close cousin of LISP, a Processing language used in Artificial Intelligence research.

Like BASIC, LOGO is interpretive, that is the compilation process mentioned earlier is not necessary. As a consequence the edit/run cycle is fast and easy, which is a very valuable asset in an educational environment.

"LOGO occupies a unique position, being a close cousin of LISP, a Processing language used in Artificial Intelligence research."

Furthermore APPLE LOGO includes a superb full screen Editor which resides in memory (i.e. no need for time consuming disk accesses) and is a joy to use compared with the awkward Escape sequences of APPLESOFT BASIC. (An Editor is a program that allows one to make changes to the human understandable instructions to the computer. A full screen variety is one which permits one to move the cursor to anywhere on the screen and to make insertions and deletions without tracing over with the right arrow and so on.)

LOGO is a modular or procedural language. For instance, if you want to draw a star on the screen you simply define a PROCEDURE and call it DRAWSTAR, say. Whenever you want to draw a star simply type DRAWSTAR in the immediate or deferred execution mode as in APPLESOFT BASIC. In a way a PROCEDURE is like a subroutine with GOSUB or DEF FN in BASIC.

Logo and the turtle

However, a LOGO PROCEDURE may contain many lines of code, not just one line as in DEF FN. Also the variables within one PROCEDURE are totally separate from variables in other PROCEDUREs or in the calling program. That is, they can have different values even though they may have the same name. It is of course possible to have variables to take on the same value throughout a number of PROCEDUREs. PROCEDUREs can also take on any number variables as inputs e.g. to specify the colour and size to be used by DRAWSTAR.

> "Programming in LOGO becomes a matter of sorting out one's ideas into lots of simpler .tasks."

Programming in LOGO becomes a matter of sorting out one's ideas into lots of simpler tasks or PROCEDUREs. These PROCEDUREs, once defined become, and can be used just like, any RESERVED WORDS such as PRINT; they simply become a part of LOGO's vocabulary. In this manner, LOGO in OPEN ENDED and EXTENSIBLE.

In fact, it is too simplistic to think of LOGO as just another programming language. When implemented, LOGO turns your computer into a learning machine that you, the programmer can teach to perform specified tasks. More importantly, the interaction between user and machine is done in a manner that accommodates the human - interactive operation, excellent editing features, procedural structure, meaningful identifiers (not just the first two letters are significant) and so on.

> "The interaction between user and machine is done in a manner that accommodates the human."

In an educational setting, LOGO provides an excellent learning and exploring environment. For example, the teacher can define a set of suitable PROCEDUREs for the students. They can then be set the task of exploring the effects of and interaction between these PROCEDUREs. They can use these PROCEDUREs or construct new ones from them to solve problems. This way LOGO can be "taught" new tricks and the students learn the art of problem solving during this "teaching" process. The connection with Artificial Intelligence may now be a little clearer.

Another feature of LOGO that deserves mention is the way it treats data. LOGO does not make any distinction regarding variable types. A given variable can at one instance stand for a number but later on can denote a character string. For instance, a program may require a series of numerical data to be entered from the keyboard. In BASIC one would have to use special characters (Esc, null or control characters) to signal the end of data entry. In LOGO one can simply type in "no more" to terminate data entry.

> "This way LOGO can be "taught" new tricks and the students learn the art of problem solving during this teaching process."

Of course one can achieve the same effect in BASIC with a few extra lines of code; but then we do not want to be slaves to the machine, do we?

Apart from the usual arithmetic functions, LOGO has built in PROCEDUREs to manipulate data objects called WORDS and LISTS. A WORD is a string of characters. A LIST can be thought of as a collection of objects. These objects can be WORDS or even other LISTS.

This feature makes LOGO very powerful in problems involving the manipulation of symbols. In contrast, BASIC only has STRING variables and built in functions only operate on one CHARACTER at a time. It is of course possible to simulate the WORD and LIST manipulating function in BASIC - but it then becomes a case of MAN being subservient to the MACHINE again.

> "This feature makes LOGO very powerful in problems involving the manipulation of symbols."

We hope to be able to discuss the LIST manipulating features of LOGO in a future article.

Turtle geometry

One of the advantages of using LOGO as a learning environment is the availability of TURTLE GRAPHICS.

TURTLE GRAPHICS is simply a set of commands which moves a TURTLE around the screen. The TURTLE can be made to move forward, backward or turn, by specified amounts. It can also be made to leave behind a trail of ink of various colours to form a picture. TURTLE GRAPHICS there by solves the problem of What to Compute.

It is very easy to make the TURTLE do interesting things and as we shall see, TURTLE GRAPHICS itself is a very rich source of discoveries that extend far beyond child play.

One may recall Cartesian geometry one learned at school. It was named after the 15th century mathematician Rene Descartes who while watching the proverbial fly on the window pane noted that it is possible to specify the position of the fly on the window by specifying the horizontal and vertical distances along the window frame relative to say the bottom left hand corner.

> "It is possible to specify the position of the fly on the window by specifying the horizontal and vertical distances along the window frame relative to say the bottom left hand corner. "

Thus a point on the plane (the position of the fly, if you like) is determined by specifying a pair of numbers (x,y) called the co-ordinates of the point. For example, a point located at 3 units along the horizontal and 5 units along the vertical is given by (3,5). A straight line can be fixed by giving the two end points.

A general curve, however, will be specified by a mathematical relationship between the co-ordinates of points lying on the curve.

For example, all points (x,y) lying on a circle of radius R centred at (a,b) satisfy the formula:

$$(x-a)^2 + (y-b)^2 = R^2 .$$

To specify a square of a given size with its sides parallel to the vertical and horizontal is very easy. However, to describe the same square which has been rotated through some given amount so that its sides are no longer parellel to the vertical will require a knowledge of trigonometry.

The following LOGO PROCEDURE:

```
TO SQUARE :SIDE
PENDOWN
REPEAT 4 [ FORWARD :SIDE
      RIGHT 90  ]
END
```

will draw the generic square. This LOGO PROCEDURE is self explanatory to any one who reads English. The TURTLE is instructed to put the pen in the down position to draw and then move forward by an amount specified by the variable SIDE followed by a RIGHT turn of 90 degrees (a right angle). This action is to be repeated 4 times. To draw a square of 100 unit per side we simply say SQUARE 100 to LOGO.

> "This LOGO PROCEDURE is self explanatory to any one who reads English."

Now to draw a square that has been rotated by a given amount we first set the initial position and heading of the TURTLE by the appropriate amount and then ask LOGO to SQUARE 100.

TURTLE geometry uses a LOCAL (TURTLE'S) view to specify a curve while Cartesian geomety uses a GLOBAL description of the curve. Technically, TURTLE geometry uses differential equations or differential geometry while Cartesian geometry uses algebraic relations for the co-ordinates of the points on a curve.

TURTLE geometry also introduces the idea of the topology of a curve. A square and a circle are topologically equivalent as one can be made from the other by simple stretching, and both are called TOPOLOGICALLY SIMPLE. On the other hand, a figure-of-eight is not topologically equivalent to a circle because the curve has crossed itself.

These concepts lead to the TOTAL TURNING theorem for the TURTLE. If the TURTLE has traced out a topologically simple curve (no crossings) then the TURTLE has turned through EXACTLY 360 degrees. This is provided one assigns left hand turn to be positive and right hand turns to be negative or vice versa.

If the TURTLE has crossed its own path EXACTLY once then the TURTLE has turned through 0 or 720 degrees. This depends whether the crossing is of the figure-of-eight or loop-the-loop type. The analogous theorem in Cartesian geometry is about the sum of interior angles of polygons - the interior angles of a triangle adds up to 180 degrees, a quadrangle to 360 degrees.

The book *Turtle Geometry: the Computer as a Medium for Exploring Mathematics* by H. Abelson and A. A. diSessa makes compulsive reading for those who would like to delve into the riches of TURTLE geometry.

Do you want to know, for instance, how to use TURTLE geometry to formulate Einstein's Theory of General Relativity ?

Let me leave you with the following to explore:

```
TO FIGURE :STEP :SINC :ANGLE :AINC
PENDOWN
FORWARD :STEP
RIGHT  :ANGLE
FIGURE  :STEP+:SINC  :SINC
:ANGLE+:AINC :AINC
END
```

Play with this PROCEDURE using the invocation:

FIGURE 10 3 120 30

Try first with the increments SINC AND AINC set to zero.

Try positive and negative increments.

Set one of the increments to zero.

And observe carefully the relation between the inputs and the figures generated, and note the effects of inputs that will divide exactly into 90, 180, 270,360.

Above all, experiment.

Program Variable and Branch Lister

by Alan Bridges

When you do a lot of BASIC programming, it is easy to lose track of the variables or the lines where you want your program to branch. This is overcome with this machine language program, which will list the variables and the lines where they appear. I have also found the program handy when checking programs entered from books and magazines.

The program will also give the line numbers of GOTO and GOSUB statements.

To make it work, key in the program and save it to disk with BSAVE VARLIST, A$6000, L$350 <RET>. When you want to use it, BLOAD from disk and then LOAD your BASIC program. (The BASIC program can be worked on while the machine language program is in memory.) Then, type CALL 24576 <RET>.

You can pause the listing on the screen by typing any key. Any key will re-start it.

Editor's note:

The program presented is not as daunting as it first appears. Looking at the first line:

```
column  1      2      3     4
        6000-  A9 05  LDA   #$05
```

For those without an assembler, the only relevant columns are 1 and 2. Column 1 gives the address where the code is to be entered and column 2 gives the values. Columns 3 and 4 will be useful as a check, and I'll return to this a bit further on.

So, grab an ordinary DOS disk with some free space, and boot. When the] prompt appears, type CALL - 151 <RET>. This will put you into monitor - the prompt now on the screen will be *.

To enter the code, type 6000:A9 05 8D 2A 83 A2 ...and so on. To check what's been entered, hit <RET>. This will return the * prompt and you can now type, for the above addresses, 6000L <RET>. This should produce a display on the screen exactly as the beginning of the one printed in the magazine. If it doesn't, you have an error. And, if you have been following this on your computer, that's exactly what you'll have.

The fifth value in the above sequence should have been 63. Counting (in hex), the error is at location 6004. To correct, you must re-enter the value, so type 6004:63 <RET>, and check again, 6000L <RET>.

The program starts at 6000, possibly because this is the first available free location after the graphics pages. If the programs to be checked are very large, then conceivably there could be problems. However, with the ones that I tried, the program worked smoothly.

Finally, the program does not allow you to output to a printer. To get around this, before doing the CALL, type PR#n where n is the slot your printer interface resides. The desired outcome should eventuate.

```
]LIST

10  REM  **** DEMO PROGRAM ****
20 A = 0
30  FOR I = 1 TO 10
40  PRINT I * A
50  NEXT I
70  PRINT : PRINT
80  IF A = 10 THEN  END
90 A = A + 1
100  GOTO 30


]CALL 24576


¦A¦
   20     40     80     90     90
¦I¦
   30     40     50



¦   30  ¦
  100

]CALL-151



*6000LLLLLLLLLLLLLLLLLL

6000-    A9 05        LDA   #$05
6002-    8D 2A 63     STA   $632A
6005-    A2 02        LDX   #$02
6007-    A9 00        LDA   #$00
6009-    9D 1F 63     STA   $631F,X
600C-    CA           DEX
600D-    10 FA        BPL   $6009
600F-    A5 67        LDA   $67
6011-    85 19        STA   $19
6013-    A5 68        LDA   $68
```

continued on page 37

```
6015-   85 1A       STA   $1A
6017-   A9 00       LDA   #$00
6019-   8D 29 63    STA   $6329
601C-   A9 FF       LDA   #$FF
601E-   8D 25 63    STA   $6325
6021-   A0 00       LDY   #$00
6023-   B1 19       LDA   ($19),Y
6025-   48          PHA
6026-   C8          INY
6027-   B1 19       LDA   ($19),Y
6029-   F0 0F       BEQ   $603A
602B-   48          PHA
602C-   A0 04       LDY   #$04
602E-   20 84 60    JSR   $6084
6031-   68          PLA
6032-   85 1A       STA   $1A
6034-   68          PLA
6035-   85 19       STA   $19
6037-   4C 21 60    JMP   $6021
603A-   68          PLA
603B-   AD 29 63    LDA   $6329
603E-   F0 35       BEQ   $6075
6040-   20 78 60    JSR   $6078
6043-   20 3D 61    JSR   $613D
6046-   A5 67       LDA   $67
6048-   85 19       STA   $19
604A-   A5 68       LDA   $68
604C-   85 1A       STA   $1A
604E-   A0 01       LDY   #$01
6050-   B1 19       LDA   ($19),Y
6052-   F0 BB       BEQ   $600F
6054-   88          DEY
6055-   B1 19       LDA   ($19),Y
6057-   48          PHA
6058-   C8          INY
6059-   B1 19       LDA   ($19),Y
605B-   48          PHA
605C-   A0 04       LDY   #$04
605E-   20 99 60    JSR   $6099
6061-   90 09       BCC   $606C
6063-   98          TYA
6064-   48          PHA
6065-   20 62 61    JSR   $6162
6068-   68          PLA
6069-   A8          TAY
606A-   D0 F2       BNE   $605E
606C-   68          PLA
606D-   85 1A       STA   $1A
606F-   68          PLA
6070-   85 19       STA   $19
6072-   4C 4E 60    JMP   $604E
6075-   4C 05 62    JMP   $6205
```

```
6078-   A2 02       LDX   #$02
607A-   BD 25 63    LDA   $6325,X
607D-   9D 1F 63    STA   $631F,X
6080-   CA          DEX
6081-   10 F7       BPL   $607A
6083-   60          RTS
6084-   20 B1 60    JSR   $60B1
6087-   90 0F       BCC   $6098
6089-   20 13 61    JSR   $6113
608C-   90 F6       BCC   $6084
608E-   20 A5 60    JSR   $60A5
6091-   A9 01       LDA   #$01
6093-   8D 29 63    STA   $6329
6096-   D0 EC       BNE   $6084
6098-   60          RTS
6099-   20 B1 60    JSR   $60B1
609C-   90 06       BCC   $60A4
609E-   20 13 61    JSR   $6113
60A1-   D0 F6       BNE   $6099
60A3-   38          SEC
60A4-   60          RTS
60A5-   A2 02       LDX   #$02
60A7-   BD 22 63    LDA   $6322,X
60AA-   9D 25 63    STA   $6325,X
60AD-   CA          DEX
60AE-   10 F7       BPL   $60A7
60B0-   60          RTS
60B1-   B1 19       LDA   ($19),Y
60B3-   F0 6F       BEQ   $6124
60B5-   C8          INY
60B6-   C9 B2       CMP   #$B2
60B8-   F0 6A       BEQ   $6124
60BA-   A2 00       LDX   #$00
60BC-   C9 83       CMP   #$83
60BE-   F0 05       BEQ   $60C5
60C0-   E8          INX
60C1-   C9 22       CMP   #$22
60C3-   D0 0A       BNE   $60CF
60C5-   B1 19       LDA   ($19),Y
60C7-   F0 5B       BEQ   $6124
60C9-   C8          INY
60CA-   DD 11 61    CMP   $6111,X
60CD-   D0 F6       BNE   $60C5
60CF-   C9 41       CMP   #$41
60D1-   90 DE       BCC   $60B1
60D3-   C9 5B       CMP   #$5B
60D5-   B0 DA       BCS   $60B1
60D7-   A2 02       LDX   #$02
60D9-   48          PHA
60DA-   A9 00       LDA   #$00
60DC-   9D 22 63    STA   $6322,X
60DF-   CA          DEX
```

NEW APPLE IIc SOFTWARE AVAILABLE IN AUSTRALIA (In addition to more than 10,000 II+ and IIe programs that will also run on the IIc)

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3. JOYSTICK AND HAND CONTROLLERS – Maximise the entertainment value of fast-action arcade games.
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5. IMAGEWRITER PRINTER – Intergrates high-speed printing capability (120 characters per second) with low-noise convenience.
6. APPLE IIc CARRY CASE – Made of strong, water resistant nylon, designed with travellers in mind. Holds power supply, disks, RF modulator as well as the computer itself.

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60E0-   10 FA       BPL   $60DC
60E2-   AA          TAX
60E3-   68          PLA
60E4-   E0 02       CPX   #$02
60E6-   B0 04       BCS   $60EC
60E8-   9D 22 63    STA   $6322,X
60EB-   E8          INX
60EC-   B1 19       LDA   ($19),Y
60EE-   F0 1D       BEQ   $610D
60F0-   C8          INY
60F1-   C9 41       CMP   #$41
60F3-   90 04       BCC   $60F9
60F5-   C9 5B       CMP   #$5B
60F7-   90 EB       BCC   $60E4
60F9-   C9 30       CMP   #$30
60FB-   90 04       BCC   $6101
60FD-   C9 3A       CMP   #$3A
60FF-   90 3E       BCC   $613F
6101-   C9 24       CMP   #$24
6103-   F0 04       BEQ   $6109
6105-   C9 25       CMP   #$25
6107-   D0 03       BNE   $610C
6109-   9D 22 63    STA   $6322,X
610C-   88          DEY
610D-   38          SEC
610E-   A9 01       LDA   #$01
6110-   60          RTS
6111-   3A          ???
6112-   22          ???
6113-   A2 00       LDX   #$00
6115-   BD 1F 63    LDA   $631F,X
6118-   DD 22 63    CMP   $6322,X
611B-   90 0D       BCC   $612A
611D-   D0 07       BNE   $6126
611F-   E8          INX
6120-   E0 03       CPX   #$03
6122-   90 F1       BCC   $6115
6124-   18          CLC
6125-   60          RTS
6126-   18          CLC
6127-   A9 01       LDA   #$01
6129-   60          RTS
612A-   A2 00       LDX   #$00
612C-   BD 22 63    LDA   $6322,X
612F-   DD 25 63    CMP   $6325,X
6132-   90 D9       BCC   $610D
6134-   D0 F0       BNE   $6126
6136-   E8          INX
6137-   E0 03       CPX   #$03
6139-   B0 EB       BCS   $6126
613B-   90 EF       BCC   $612C
613D-   20 8B 61    JSR   $618B
6140-   20 8B 61    JSR   $618B
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6143-   20 5D 61    JSR   $615D
6146-   A2 00       LDX   #$00
6148-   BD 1F 63    LDA   $631F,X
614B-   F0 0A       BEQ   $6157
614D-   09 80       ORA   #$80
614F-   20 ED FD    JSR   $FDED
6152-   E8          INX
6153-   E0 03       CPX   #$03
6155-   90 F1       BCC   $6148
6157-   20 5D 61    JSR   $615D
615A-   4C 8B 61    JMP   $618B
615D-   A9 FC       LDA   #$FC
615F-   4C ED FD    JMP   $FDED
6162-   A0 02       LDY   #$02
6164-   B1 19       LDA   ($19),Y
6166-   8D 2B 63    STA   $632B
6169-   C8          INY
616A-   B1 19       LDA   ($19),Y
616C-   8D 2C 63    STA   $632C
616F-   20 A4 61    JSR   $61A4
6172-   A2 00       LDX   #$00
6174-   BD 1A 63    LDA   $631A,X
6177-   09 80       ORA   #$80
6179-   20 ED FD    JSR   $FDED
617C-   E8          INX
617D-   E0 05       CPX   #$05
617F-   90 F3       BCC   $6174
6181-   A9 A0       LDA   #$A0
6183-   20 ED FD    JSR   $FDED
6186-   CE 2A 63    DEC   $632A
6189-   10 18       BPL   $61A3
618B-   A9 05       LDA   #$05
618D-   8D 2A 63    STA   $632A
6190-   AD 00 C0    LDA   $C000
6193-   10 0B       BPL   $61A0
6195-   8D 10 C0    STA   $C010
6198-   AD 00 C0    LDA   $C000
619B-   10 FB       BPL   $6198
619D-   8D 10 C0    STA   $C010
61A0-   20 8E FD    JSR   $FD8E
61A3-   60          RTS
61A4-   A2 04       LDX   #$04
61A6-   A9 30       LDA   #$30
61A8-   9D 1A 63    STA   $631A,X
61AB-   CA          DEX
61AC-   A9 20       LDA   #$20
61AE-   9D 1A 63    STA   $631A,X
61B1-   CA          DEX
61B2-   10 FA       BPL   $61AE
61B4-   E8          INX
61B5-   A0 00       LDY   #$00
61B7-   B9 FA 61    LDA   $61FA,Y
61BA-   F0 3D       BEQ   $61F9
```

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61BC-   38          SEC
61BD-   AD 2B 63    LDA   $632B
61C0-   F9 FA 61    SBC   $61FA,Y
61C3-   48          PHA
61C4-   C8          INY
61C5-   AD 2C 63    LDA   $632C
61C8-   F9 FA 61    SBC   $61FA,Y
61CB-   90 27       BCC   $61F4
61CD-   8D 2C 63    STA   $632C
61D0-   68          PLA
61D1-   8D 2B 63    STA   $632B
61D4-   88          DEY
61D5-   BD 1A 63    LDA   $631A,X
61D8-   C9 20       CMP   #$20
61DA-   D0 13       BNE   $61EF
61DC-   A9 30       LDA   #$30
61DE-   9D 1A 63    STA   $631A,X
61E1-   8A          TXA
61E2-   48          PHA
61E3-   A9 30       LDA   #$30
61E5-   E8          INX
61E6-   9D 1A 63    STA   $631A,X
61E9-   E0 04       CPX   #$04
61EB-   90 F8       BCC   $61E5
61ED-   68          PLA
61EE-   AA          TAX
61EF-   FE 1A 63    INC   $631A,X
61F2-   D0 C8       BNE   $61BC
61F4-   C8          INY
61F5-   68          PLA
61F6-   E8          INX
61F7-   D0 BE       BNE   $61B7
61F9-   60          RTS
61FA-   10 27       BPL   $6223
61FC-   E8          INX
61FD-   03          ???
61FE-   64          ???
61FF-   00          BRK
6200-   0A          ASL
6201-   00          BRK
6202-   01 00       ORA   ($00,X)
6204-   00          BRK
6205-   20 8B 61    JSR   $618B
6208-   20 8B 61    JSR   $618B
620B-   A5 67       LDA   $67
620D-   85 19       STA   $19
620F-   A5 68       LDA   $68
6211-   85 1A       STA   $1A
6213-   A9 00       LDA   #$00
6215-   8D 28 63    STA   $6328
6218-   A0 02       LDY   #$02
621A-   B1 19       LDA   ($19),Y
621C-   8D 2D 63    STA   $632D
```

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621F-   C8          INY
6220-   B1 19       LDA   ($19),Y
6222-   8D 2E 63    STA   $632E
6225-   20 3C 62    JSR   $623C
6228-   A0 00       LDY   #$00
622A-   B1 19       LDA   ($19),Y
622C-   48          PHA
622D-   C8          INY
622E-   B1 19       LDA   ($19),Y
6230-   F0 08       BEQ   $623A
6232-   85 1A       STA   $1A
6234-   68          PLA
6235-   85 19       STA   $19
6237-   4C 12 62    JMP   $6212
623A-   68          PLA
623B-   60          RTS
623C-   A5 67       LDA   $67
623E-   85 1B       STA   $1B
6240-   A5 68       LDA   $68
6242-   85 1C       STA   $1C
6244-   A0 04       LDY   #$04
6246-   B1 1B       LDA   ($1B),Y
6248-   F0 21       BEQ   $626B
624A-   C9 C5       CMP   #$C5
624C-   B0 1A       BCS   $6268
624E-   C9 85       CMP   #$85
6250-   90 16       BCC   $6268
6252-   F0 29       BEQ   $627D
6254-   C9 AB       CMP   #$AB
6256-   F0 25       BEQ   $627D
6258-   C9 AC       CMP   #$AC
625A-   F0 21       BEQ   $627D
625C-   C9 C4       CMP   #$C4
625E-   F0 1D       BEQ   $627D
6260-   C9 B0       CMP   #$B0
6262-   F0 19       BEQ   $627D
6264-   C9 BC       CMP   #$BC
6266-   F0 15       BEQ   $627D
6268-   C8          INY
6269-   D0 DB       BNE   $6246
626B-   A0 00       LDY   #$00
626D-   B1 1B       LDA   ($1B),Y
626F-   48          PHA
6270-   C8          INY
6271-   B1 1B       LDA   ($1B),Y
6273-   85 1C       STA   $1C
6275-   68          PLA
6276-   85 1B       STA   $1B
6278-   B1 1B       LDA   ($1B),Y
627A-   D0 C8       BNE   $6244
627C-   60          RTS
627D-   20 D5 62    JSR   $62D5
```

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6280-   AD 29 63    LDA   $6329
6283-   F0 47       BEQ   $62CC
6285-   A5 1D       LDA   $1D
6287-   CD 2D 63    CMP   $632D
628A-   D0 40       BNE   $62CC
628C-   A5 1E       LDA   $1E
628E-   CD 2E 63    CMP   $632E
6291-   D0 39       BNE   $62CC
6293-   98          TYA
6294-   48          PHA
6295-   AD 28 63    LDA   $6328
6298-   D0 23       BNE   $62BD
629A-   A9 01       LDA   #$01
629C-   8D 28 63    STA   $6328
629F-   20 8B 61    JSR   $618B
62A2-   20 8B 61    JSR   $618B
62A5-   20 5D 61    JSR   $615D
62A8-   AD 2D 63    LDA   $632D
62AB-   8D 2B 63    STA   $632B
62AE-   AD 2E 63    LDA   $632E
62B1-   8D 2C 63    STA   $632C
62B4-   20 62 61    JSR   $6162
62B7-   20 5D 61    JSR   $615D
62BA-   20 8B 61    JSR   $618B
62BD-   A0 02       LDY   #$02
62BF-   B1 1B       LDA   ($1B),Y
62C1-   8D 2B 63    STA   $632B
62C4-   C8          INY
62C5-   B1 1B       LDA   ($1B),Y
62C7-   20 6C 61    JSR   $616C
62CA-   68          PLA
62CB-   A8          TAY
62CC-   B1 1B       LDA   ($1B),Y
62CE-   C9 2C       CMP   #$2C
62D0-   F0 AB       BEQ   $627D
62D2-   4C 46 62    JMP   $6246
62D5-   A9 00       LDA   #$00
62D7-   85 1D       STA   $1D
62D9-   85 1E       STA   $1E
62DB-   8D 29 63    STA   $6329
62DE-   C8          INY
62DF-   B1 1B       LDA   ($1B),Y
62E1-   C9 20       CMP   #$20
62E3-   F0 F9       BEQ   $62DE
62E5-   B1 1B       LDA   ($1B),Y
62E7-   38          SEC
62E8-   E9 30       SBC   #$30
62EA-   90 2D       BCC   $6319
62EC-   C9 0A       CMP   #$0A
62EE-   B0 29       BCS   $6319
62F0-   EE 29 63    INC   $6329
62F3-   48          PHA
62F4-   06 1D       ASL   $1D
62F6-   26 1E       ROL   $1E
62F8-   A6 1E       LDX   $1E
62FA-   A5 1D       LDA   $1D
62FC-   06 1D       ASL   $1D
62FE-   26 1E       ROL   $1E
6300-   06 1D       ASL   $1D
6302-   26 1E       ROL   $1E
6304-   65 1D       ADC   $1D
6306-   85 1D       STA   $1D
6308-   8A          TXA
6309-   65 1E       ADC   $1E
630B-   85 1E       STA   $1E
630D-   68          PLA
630E-   65 1D       ADC   $1D
6310-   85 1D       STA   $1D
6312-   90 02       BCC   $6316
6314-   E6 1E       INC   $1E
6316-   C8          INY
6317-   D0 CC       BNE   $62E5
6319-   60          RTS
631A-   20 20 31    JSR   $3120
631D-   30 30       BMI   $634F
```

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A complete guide to Visicalc

There will always be a debate as to what sparked the personal computer revolution. You can easily defend the case it was the Apple. Or you can suggest the revolution was software driven. If the last is true then the program which fired the revolution was, beyond peradventure, VisiCalc. It sold more Apples to business than any other program. It is not easy to learn. Here, Keith Harrison provides a basic, easy-to-understand, guide.

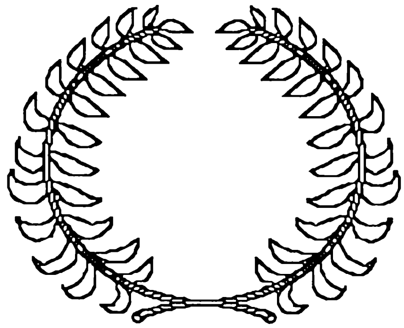
Visicalc is a powerful spreadsheet program, which probably contributed to the early success of the Apple][more than any other single program. There are other spreadsheets available now such as Multiplan and Supercalc but Visicalc remains one of the easiest to use and is wholly suitable for most applications.

Visicalc worksheets can be used to create files for use by the Visiplot program to produce graphs. This aspect is covered later in the instructions.

Starting Up

To start using Visicalc place the disk in Drive 1 and switch on the computer. There are two versions of Visicalc. One provides a 40 column display, the other a choice between 40 and 80 column. 40 column is preferable if you are using a colour monitor or a TV set via a PAL card. The 80 column is better for using on a monitor as more information is displayed.

If you have the 40 column version the blank Visicalc spreadsheet will appear once the drive has stopped running. With the 80 column version, and the monitor in 40 column mode, the display asks whether you wish to use 40 or 80 columns. Key Y for 80 column. You will then be asked if you have the Videx inverse generator. If you have, key Y. With some 80 column cards the inverse generator has been replaced with a character generator which displays some Japanese characters and limited graphics. Keying Y with one of these gives some interesting but unpleasant effects on Visicalc and keying N is recommended. The disk drive will start running again and after a few seconds it will stop and the Visicalc spreadhseet will appear. At this point you can remove the Visicalc disk if you wish, as the programme is stored in the Apple RAM and further loading is unnecessary.



Basic function of Visicalc

In essence the spreadsheet is a matrix of cells arranged in 63 vertical columns and 254 horizontal rows. Columns are designated by alphabetic characters and rows by numbers. In other words the top left hand corner of the matrix is cell A1, the bottom right corner is BK254. Cells may contain two types of information, called Labels or Values.

Once the wanted label or value has been typed press RETURN or one of the arrow keys to "lock" the entry. Errors made during entry can be corrected by using the ESC key, which acts as a rubout. (see /E command). Repeated use of the ESC key will clear the entry or command.

At the top right corner of the screen is a number, which represents the memory available to the user in kilobytes. With a 48K Apple this will be 19, on 64K machines about 32K is available. This number will reduce as the worksheet is filled up. When the value approaches zero be careful as you could lose your work when saving to or loading from disk. Try to "housekeep" regularly by using memory saving tricks or by splitting large files in order to save space.

Labels

The cells can contain Labels such as column headings, or titles. These are

Continued on page 44

Can you be ruth and a loving paren

There are many ways for you to be more competitive in the way that you go about your business. (The faint-hearted would call some of these ploys ruthless.)

But there is one way that allows you to improve your business efficiency, and give your kids a head start at the same time.

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At their own pace, with the new found

less in business
t at the same time?

concentration that a computer creates, your children can take themselves on a private tuition course that covers virtually every subject on the school curriculum.

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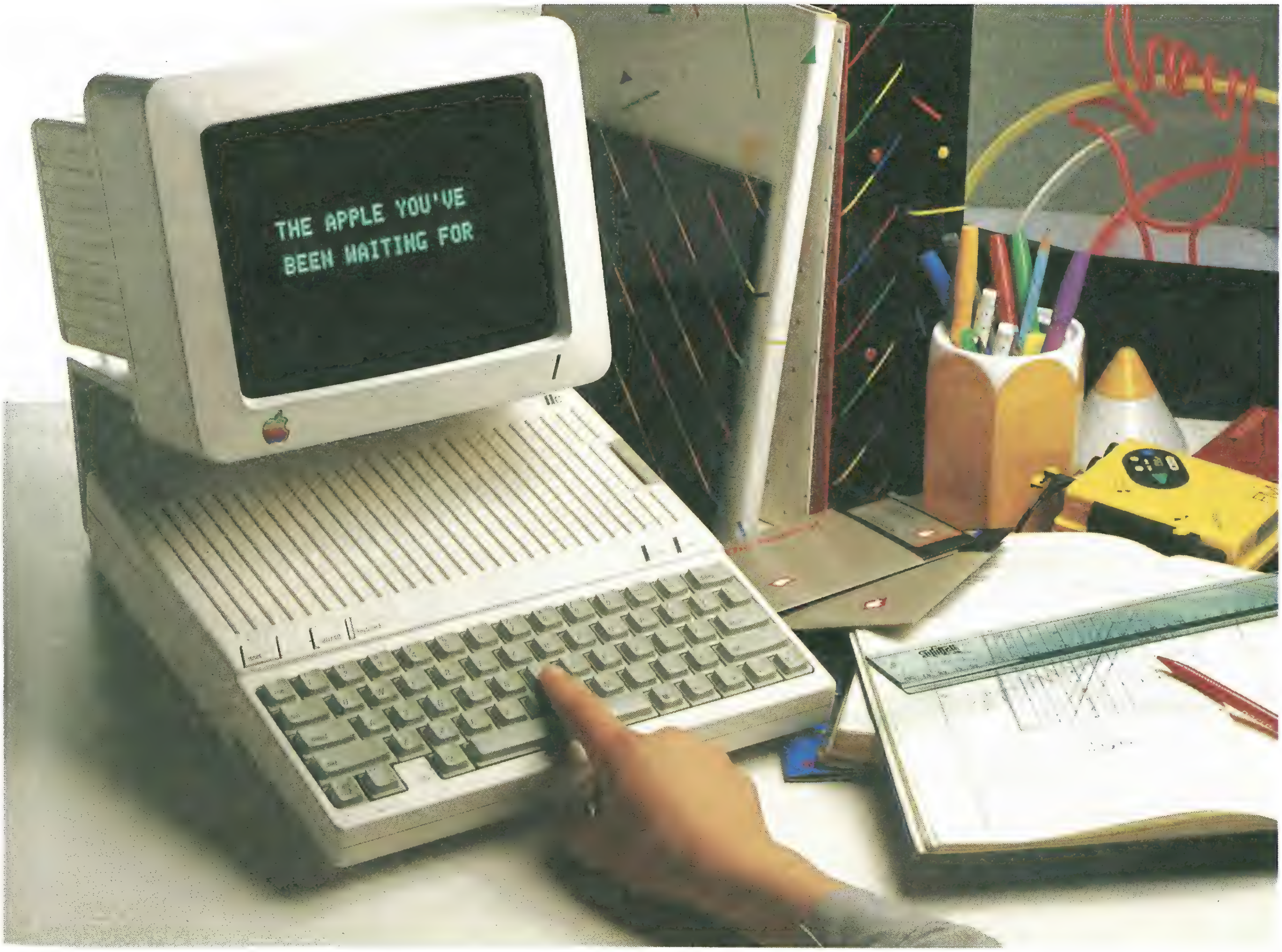
apple



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inserted by simply typing the words required, followed by RETURN or an arrow key. In order to insert non alphabetic characters such as dashes or dots type any alpha character, remove it with ESC and then enter the characters wanted. This is necessary as Visicalc does not recognise dots, dashes or colons as either labels or values in their own right.

Values

Values can be entered in two ways. Firstly the direct entry of number is allowed, such as '123', '7.8' or '1.23E3'. You will notice that Visicalc can accept scientific notation.

Secondly values can be derived by formulae, and it is now that the power of the program is demonstrated. Cell values can be calculated from numeric data or other calculations in the spreadsheet, providing an ideal tool for "what if?" exercises or the provision of growth rates, annualisation calculations and the like.

"and it is now that the power of the program is demonstrated."

Formulae must be preceded by a left bracket, otherwise Visicalc may regard them as labels. A right bracket can be placed at the end of the formula but this is not vital. Examples of formulae are:

- (A7 + 29.3 This will add 29.3 to the value in A7 and show the result in the cell in question.
- (A7*C10-29.3 This will calculate the product of A7 and C10 and subtract 29.3 from the answer.

Changing A7, B7 or C10 in the examples above will also change the value in the cells used to show the answers. Try it!

You will also notice that there is no closing bracket in the last example. Visicalc uses the Basic convention of BEDMAS, where calculations are performed in the following order: Brackets, Exponents, Division, Multiplication, Addition, Subtraction. Brackets can be inserted in arithmetic notation but these use memory and can be omitted as long as BEDMAS is remembered.

Cursor movement

To move the cursor use the left and right arrow keys. At the top right corner of the screen you will see an inverse box with either - or ! in it. This shows whether the arrow keys will move the cursor horizontally or vertically. - gives horizontal movement, ! gives vertical movement. The direction can be changed by using the space bar.

The cursor can be moved directly to any cell by keying > followed by the cell required. For example >A1 will move the cursor to the top left corner. > is entered by keying Shift full stop. The Edit line will show the label, value or formula in each cell occupied by the cursor at the time.

Slash commands

Slash commands are the way in which Visicalc is used to quickly create a worksheet from the blank spreadsheet. It will be necessary to learn most of them but do not worry as you will find that with practice their use comes naturally. They will appear a little confusing at first but perseverance is worthwhile!

"to quickly create a worksheet from the blank spreadsheet"

Keying / gives a statement in the prompt line asking which command is required. The display will show "BCDEFGIMPRSTVW". Keying one of these letters will allow the use of the appropriate command.

/B blank

Keying / then B RETURN blanks out the cell that the cursor occupies. Any data, either a label or a value will disappear.

/C clear

/C gives the prompt message "Del "CLEAR: TYPE Y TO CONFIRM". Keying Y at this point will clear the spreadsheet. Beware! All your work will disappear forever so be sure you have finished with it. Spreadsheets can be saved on disk for future use if needed. (see /S commands).

/D delete

/D gives the prompt message "DELETE : R C". With this command you can remove entire columns or rows, including all labels and values. /DR deletes the row the cursor currently occupies, all entries below moving up. /DC does the same for a column, all columns to the right moving left to fill the gap. If formulae relate to columns or rows that have been deleted the "ERROR" message will appear in cells so affected.

"Beware! All your work will disappear forever"

/E edit

/E allows the alteration of labels and values in any cell. Move the cursor to the cell required by using the arrow keys or >. Enter /E. Move the edit cue with the arrow keys and type the amendment over the previous entry.

If errors are noticed while data is being entered in any cell the edit function can be performed by keying ^E. The ^ shown is the Control (CTRL) key.

To delete characters in Edit mode use the ESC key.

/F format

The format command allows any cell to be preset to give a particular type of display. Keying /F gives the prompt value being read from the edit display "FORMAT : D G I L R $ * ". By keying one of these characters formats can be varied. The RETURN key need not be used. Format commands can be Replicated (see /R) in advance of data being entered.

D This defaults the cell format to that in use for the rest of the spreadsheet (see Global command). If no other global command has been made the default values are right justification floating decimal for values and left justification for labels.

G This returns the cell to the General format used when Visicalc is loaded (see definition above).

I This presents values in Integer form.

L This justifies entries to the left.

R This justifies entries to the right.

$ This presents values in 'dollars and cents' form, ie two decimal places.

***** This displays integer values in star form and can be used to create bar graphs.

The format used will appear in the edit lines for each cell, including those that have been formatted by replication.

/G global

Global commands set the operation of the whole spreadsheet. Keying /G gives the prompt message "GLOBAL : C O R F". Keying one of these gives th the following options.

C This changes the width of all columns to any value entered between 3 and 80 (40 in the case of 40 column Visicalc). If values are longer than column widths the cell will display ">>>>>>>>" or similar. The value is not lost but cannot be read unless the cursor is moved to the cell in question, the value being read from the edit line.

O This displays the prompt message "RECALC ORDER : R C". Keying either R or C set the order in which Visicalc calculates values from formulae entered. The default value is Column recalculation.

R Keying R gives the prompt "RECALC : A M" and can be used to suppress the calculation of formulae during data entry. Visicalc will check all calculations as each cell is loaded with data which can slow down data entry, particularly in large worksheets. Keying /GRM will allow quick entry of data, with no calculation. To check calculations at any time key ! (shift 1) and this will perform a one-shot calculation. Keying /GRA will restore automatic calculation.

F This produces the Format prompt display, which can be used to set the format for the whole spreadsheet. For example keying /GF$ will set all values to two decimal places. If /GF$ is used take care that column widths are not exceeded.

/I insert

/I is used to insert rows or columns in the spreadsheet. All formula relations are adjusted by Visicalc to protect the integrity of data already entered. Keying /I gives the prompt "IN "INSERT : R C". Keying R inserts a blank row at the cursor position, all other data moving down. Keying C inserts a column.

Formulae are recalculated to take care of inserted columns or rows.

/M move

/M gives the prompt "MOVE : FROM...TO". This can be used to move either rows or complete columns to a new position. To move a row, place the cursor anywhere in the row concerned and key /M. Type the new row cell number in the same column and hit RETURN. For example to move row 8 to row 12 with the cursor in column C place the cursor in cell C8, type /M C12 RETURN.

To move columns place the cursor at the top of the column to be moved and specify the new column location after /M. For example to move column C to column A place the cursor on cell C1. Type /M A1 RETURN. Column C will become column A, column A will become column B and so on.

Columns can be inserted into existing locations. Moving a column to, say column C will move the existing column C to D, and all other columns will be moved one location to the right.

/P print

Printing your Visicalc file really demonstrates the usefulness of the program. It allows the maintenance of regularly updated records on disk with the quick production of updated statistics at the touch of a button.

With a worksheet on the screen and the cursor in cell A1, key /P. This gives the prompt "PRINT FILE PRINTER # (OF SLOT)". Visicalc defaults to the file in memory and to slot #1 for the printer. Key RETURN.

The prompt then reads "PRINT; LOWER RIGHT," SETUP, -, &". Visicalc sends a line feed to the printer after each line, and in most printer protocols it is necessary to suppress this or you will have double spaced output. Keying - at this stage stops the Visicalc line feed and produces single line spacing on most printers. If you are using a printer which does not have an internal line feed do not key the -. Epson and Silentype printers need to have the line feed suppressed.

It is now necessary to specify the bottom right corner of the worksheet being printed. This depends on the size of worksheet and the printer used. In the case of an 80 column printer such as the Silentype the right hand column should be the last column on the screen. If no Global column width commands have been entered (see /G global) this will be column H. The row number should be the lowest filled row in the worksheet. If wider worksheets are in use the printing must be completed in 80 column vertical sections and 'pasted up' for later copying. To do this move wait until the printer has finished and the cursor to the head of the next column to be printed (in the case of an 80 column printer this will be column I). Repeat the print sequence /P RETURN - followed by the next bottom right location (column P in the 80 column case). If wider printers such as Epson 130 column machines are available, then count the number of columns which can be printed and enter the appropriate bottom right cell number.

Other print commands

On some printers special print fonts can be commanded during the print set up stage. Many Epson printers can be driven into half width characters by sending CHR$ (15) by keying in ^0, (CHR$ (18) by keying in ^R on an Apple][). To command Visicalc to print half width characters a special set up procedure is necessary. The following example should show how this can be done.

Example

To print a worksheet ending at M75 using half width characters on an Epson 130 column printer such as an MP-100III:

Move the cursor to cell A1 by keying >A1. Type /P RETURN -. Type ". This will give the prompt "PRINT : SET UP OR RETURN". Type ^CO RETURN. The character ^ here is the carat, obtained by keying Shift N, not the CTRL key.

The C tells Visicalc that the next character is to be a control character. The "O" is therefore control O, equivalent to CHR$ (15). Type M75 RETURN and the printer will run the print routine.

To return the Epson to normal print mode the next Visicalc print command should have a set up string which includes ^CR. This is equivalent to CHR$ (18) in Basic as we have seen. For thoseprinters which require ESC characters to drive the half width print mode (or other print fonts) use ^E instead of ^C before the appropriate command character.

Other characters can be inserted in Set Up strings for different purposes but it is recommended that users consult the Visicalc handbook in conjunction with that of the printer used for details.

It is possible to create Print Files which will include all Format commands for printing later from programs written in Basic. These take the form of Applesoft sequential access Text Files, which can be read by using the PFPRINT program, available from the mighty Harrisoft Corporation.

To create a Print File, type /PF. This prompts you to name the file. Using the suffix ,Dn in the name will save the file to the disk in drive n. You are then asked to define the bottom right cell in the worksheet. Entering this and RETURN saves the print file on the disk.

/R replication

Replication is the ability to repeat calculation principles over a whole column or row. This command is extremely useful for producing things like rolling annual totals, for example. Here there is a need to add up the figures for January to December in one month, February to January next month and so on. The Replication command permits the repetition of a calculation principle over and over again, changing the scope of the calculation each time.

There are many ways that the Replicate command can be used but we will confine this explanation to that necessary to repeat calculations for simple worksheets. Both formulae and labels can be replicated.

Place the cursor on the formula to be replicated. Key /R. This produces the prompt "REPLICATE : SOURCE RANGE OR RETURN". Hit RETURN. This gives the prompt "REPLICATE ; TARGET RANGE". Now it is necessary to tell Visicalc the scope of the replication, by marking the start and finish of the column or row through which replication is required.

If the replication is to be made through a column, ensure that the arrow keys for cursor movement are in the vertical mode. Move the cursor down one cell by hitting the right arrow key. (If replication of the row is needed, the arrow keys should be in horizontal mode and the cursor should be moved right one cell). Now enter the bottom cell in which replication of the calculation is required (righthand cell in the case of row replication). Hit RETURN. It is not necessary to use the arrow keys. The start of the target range can be entered by merely keying in the cell number. The entry of the end cell will place three full stops between the start and end cell locations.

> **"the ability to repeat calculation principles over a whole column or row."**

Visical will now ask whether the various components of the formula are relative to the range or are fixed by prompting with 'REPLICATE ; N=NO CHANGE, R=RELATIVE". By typing "N" or "R" appropriately the calculation is complete. Once all components of the formula are covered the replication will be made and all empty cells in the specified range will be filled with numbers.

UNMITIGATED GALL

The Worm in the Apple

And now to a curious story. My Taiwanese cousin Chan Worm has seen a peculiar machine indeed. It is an Apple IIe mother board - probably fake - turned sideways with the keyboard mounted above and two 3.5 inch drives mounted above the keyboad and all of it driven by a battery take from a BetaMax camera. All of this encased in a snazzy plastic box.

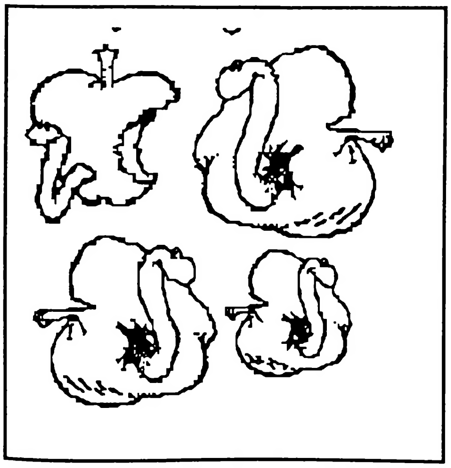
Apple have bought six of these illegal models.

For what reason I know not.

Neither shall I guess.

But is this the basis for a new portable Apple which requires no outside power supply? And, *mirabile dictu,* did the idea come from a Taiwanese priate?

There are some areas into which it is better not to enquire.



Those stalwart citizens of Australia who insist on watching the ABC television may have seen a program called "The Investigators" recently when an Apple dealer in Sydney was bucketed for apparently not doing the decent thing by a customer who had purchased a fake Apple called a Fox.

Rude words were spoken by all and sundry but no one brought out what this Worm considered a most pertinent point.

Why did no-one investigate why the purchaser, who didn't seem short of a quid, had bought a palpably fake Apple in the first place.

This Worm has a cousin who manages to sneak into the ABC's premises on Chandos Street from time to time and saw the office of "The Investigators" where everyone was in a righteous rage over this poor purchaser's plight. But none of them were willing to concede that if you buy a fake article you are taking your life in your hands and the result will nearly always be tears before teatime.

* * *

Those of you with an observant eye for this sort of thing will have noticed David Roman recently released the quite fascinating figure that Apple Australia had sold 1,400 Macintoshes in the month of June. You can take it as read they were all fat Macs so the income must have been more than somewhat.

Even more interesting is the figure puts Mac ahead in sales of all but a handful of personal computers - miles ahead.

It has generally been acknowledged there is a sort of 5,000 unit barrier on sales of personal computers in Australia - a barrier very few companies have ever managed to broach.

Now, although even this Worm is not daft enough to think the June sales were not affected by the pressure of the 18% tax allowance the Worm's spies within Apple say this was by no means an unusual month. Which should mean Apple are selling over 12,000 Macintoshes a year. Which must gladden the hearts of David Strong et al out at the stately pleasure dome in Ryde.

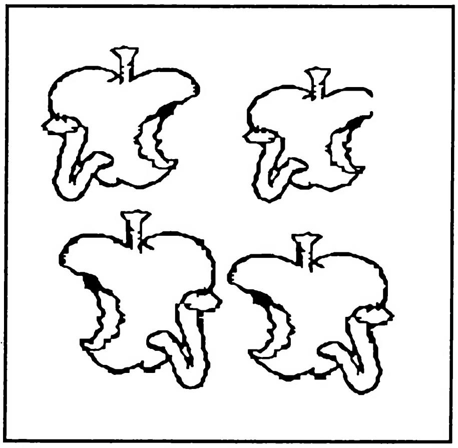
There are many who thought - this lowly Worm was not among them - that the Macintosh had been launched with too little and too late programs to make a significant impact on the Australian computer industry.

This is now plainly not so and the Macintosh , in its own right, is the fifth or sixth fastest selling personal computer on the market today. Which I find extremely gratifying.

* * *

This Worm, purely in the interests of research, has been playing with the Commodore Amiga. (Being a Worm does have its privileges). The machine I have been using has an amazing seven, count them, seven megabytes of random acess memory and uses four microprocessors instead of just the single 68000 in the Macintosh. The result is it works very quickly indeed and, this is the amazing piece, will run IBM software straight out of the box through a special drive. In the glory of full colour.

Although Worms know nothing of programming languages and such, a programming friend has said converting Macintosh programs over will be the work of days rather than months. Because the central processing unit is the same in both cases.



Having played with the Amiga, and realising its possible drawbacks (mainly concerned with Commodore and production rather than design) and the teething problems it is undoubtedly going to encounter, if I was in Cupertino I would be looking at this machine very carefully, indeed.

Far be it for a humble Worm to tell the assorted glitterati of Cupertino what to do. After all, many of them went to business college. Yet, I think in the Amiga we have seen the design of the future. All it needs is stringent quality control.

The Worm in the Apple

What is happening at Apple International? Has their fortune cookie told them some wondrous truth not revealed to ordinary mortals?

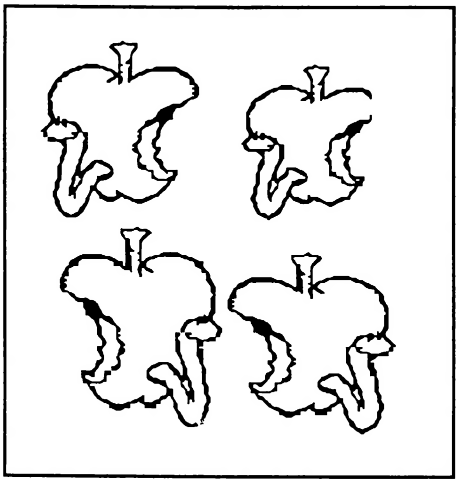
Take the strange situation in Asia.

As I have mentioned before, Apple eventually got their act together and appointed a very professional mob called Gilmans to sell their machine. As this company has the office machinery market in Hong Kong by the throat, is sincerely rich and at the same time professional, all augured well.

But Hong Kong is not Cupertino nor yet is it Australia and the market is (a) saturated with fake Apples and (b) saturated with IBM clones.

My Chinese cousin, Confucious Worm, has written (on ricepaper, of course) to tell me Gilmans eagerness to get the agency was not unassociated with the fact they also got the People's Republic of China thrown in. Whereas Hong Kong as personal computer market is worth three soggy dim sums, China is, potentially, the biggest market in the world.

To deal with this Gilmans had a full time manager, yclept Robert Carroll, who is not only a clean cut American executive but also speaks Mandarin and is not unfamiliar with those squiggles they call writing in the East.



Two or three months ago Apple, in its California dreaming wisdom, decided the time had come to hand the People's Republic of China part of the agency to someone else.

What Apple gives, Apple can also take away.

Gilmans were, understandably, less than chuffed, when Apple - in its all-seeing, infinite wisdom - gave the exclusive agency for China to a Singaporean joint venture company - the other party being overseas Chinese within China. This, would, on the face of it, appear logical in that Apple has a factory in Singapore.

The fact 98% of all trade from the West with China is handled by Hong Kong fazed Apple international executives not the least. As they appear to work on the basis the world ends in Hawaii this comes as a surprise to no-one, especially this humble, downtrodden Worm. (The story that it is an essential for Apple executives to have failed geography in primary school is a malicious lie and should be ignored. Nor is it true they keep on addressing their letters to Hong Kong, Japan.)

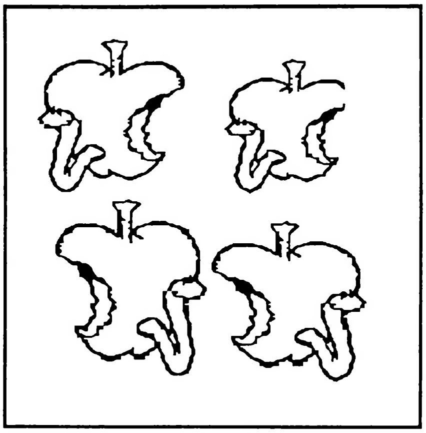
But now the story gets curiouser and curiouser.

Confucius Worm tells me Apple are now opening a corporate office to take care of Asia. Not, in itself, a bad thing.

And are they opening it in Singapore?

No. They are opening it in Hong Kong.

Any reader who can explain the meaning of this strange move to this perplexed and mystified Worm will be awarded with one slightly ancient dim sum, sent as a present by Confucius Worm.



* * *

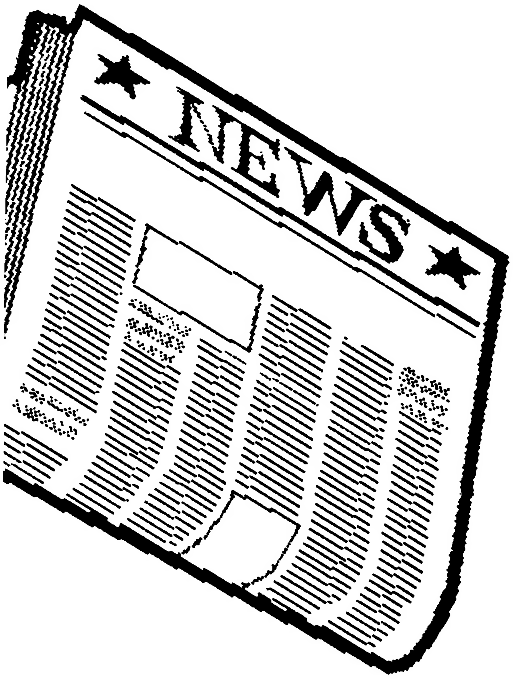
This Rat is astounded by the rapidity of movement of the peripatetic and Mac crazed William Bullock. Having spent some time as resident Macintosh guru with the balding ex-Thespian of Bondi, Greg Lister he now turns up at a company where they used to answer the telephone - I promise you this is true - with the strange phrase "Intelligence Limited. Can I help you?"

It was only when the telephonist threatened to resign over the smart remarks she had in reply, sanity prevailed and the name of the company changed.

I am glad that young Bullock has ended up there in a safe haven because the company brings in some remarkable programs which will no doubt be reviewed from time to time in this august journal.

As William Bullock is a true Macintosh enthusiast he should have no problems improving the sales of the list of programs which he represents. Some of them are great value indeed.

Dealer Directory



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